92-1, ***Publication Date: JANUARY 6, 1992***

Tire Wear - Front - 16,000 To 20,000 Lb. Axle With Flotation Tires	Article No. 92-1-9

MEDIUM/HEAVY TRUCK:
1982-90 L SERIES

ISSUE:
Excessive front tire wear on L-Series vehicles with 16,000 to 20,000 lb. axles and flotation tires may be caused by the wheel "cut angle" and the design of the Ackerman arms.

ACTION:
Install new 1987 level Ackerman arms and adjust the wheel "cut angle" using the following service procedure.

SERVICE PROCEDURE

1. Install right hand Ackerman arm (E7HZ-3130-K) and left hand Ackerman arm (E7HZ-3131-K). Reuse the original nuts and keys.

2. Torque the tie rod nuts to 110-150 lbs.-ft.(149-203N-m).

3. Torque the Ackerman arm nuts to 540-730 lbs.-ft.(732-990N-m).

4. Reuse the original tie rod and adjust the toe-in after installation of the Ackerman arms to the original 1/8"± 1/16" setting on Merrill dynamic alignment equipment.

5. Torque the tie rod clamp bolts to 50-70 lbs.- ft.(67-95N-m).

6. Adjust spindle stop bolt to 2-3/8 inches to achieve 31° of wheel cut. Refer to Figure 1.

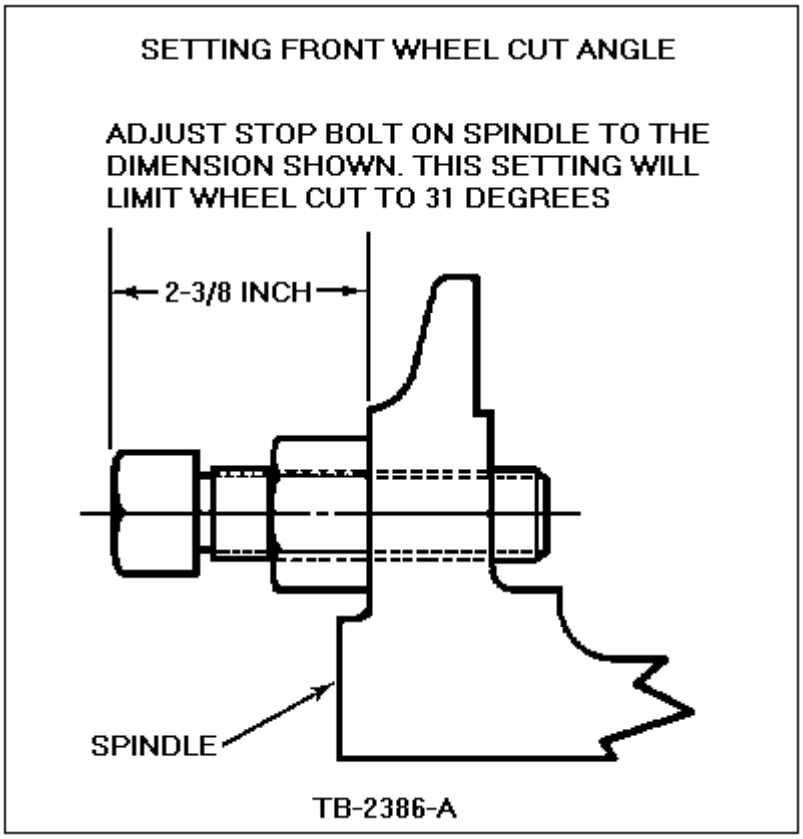

SETTING FRONT WHEEL CUT ANGLE
ADJUST STOP BOLT ON SPINDLE TO THE DIMENSION SHOWN. THIS SETTING WILL LIMIT WHEEL CUT TO 31 DEGREES
2-3/8 INCH
SPINDLE
TB-2386-A

Figure 1 - Article 92-1-9

7. Inspect tie rod end socket to wheel rim and balancing weight clearance, make sure clearance is at least 1/2 inch.

8. Inspect the inside edges of the tires, make sure the tires do not contact the assist cylinder or the draglink/pitman arm at full left and right turn.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 87-17-20

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 303000, 304000, 306000

92-1, ***Publication Date: JANUARY 6, 1992***

• **Stumble - 6.6L Ford Diesel Engine - Static Timing Advance Procedure - Certified To 1991 Emission Standards** • **Exhaust - White Smoke - 6.6L Ford Diesel Engine - Static Timing Advance Procedure - Certified To 1991 Emission Standards**	**Article No. 92-1-10**

MEDIUM/HEAVY TRUCK:
1991 CARGO SERIES, F & B SERIES, L SERIES

CALIBRATION:
1-80J-R00, 1-80B-R00, 1-80A-R00

WARNING:
THIS MODIFICATION IS AUTHORIZED ONLY FOR THE LISTED ENGINE. PERFORMING THIS MODIFICATION ON OTHER ENGINE CALIBRATIONS IS UNAUTHORIZED AND COULD CREATE LIABILITY UNDER APPLICABLE FEDERAL OR LOCAL LAWS.

ISSUE:
The engine may stumble and there may be excessive white exhaust smoke during all ambient temperatures. This is caused by the static timing not being properly advanced.

ACTION:
If service is required, advance the fuel injection pump timing 1° on 1991 Phase II 6.6L Ford Diesel Engines by using the following service procedure.

SERVICE PROCEDURE

1. Remove the injection pump access cover and basket.

2. Rotate the engine clockwise.

   a. Set engine at correct static timing angle with number 1 piston on the compression stroke.

   b. Fit Damper Aligning Pin (T87T-6379-A) through the timing bracket into the correct crankshaft damper groove, Figure 1.

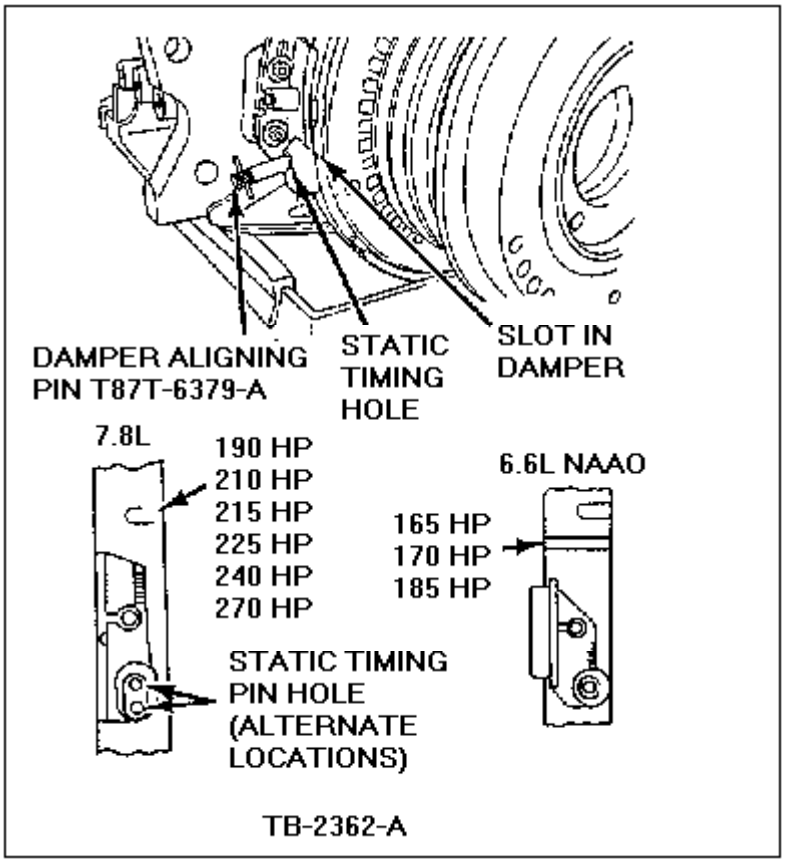


Figure 1 - Article 92-1-10

NOTE:
WHEN UNABLE TO ACCESS THE FRONT DAMPER MOUNTING BOLT TO ROTATE THE ENGINE, REMOVE THE PLUG OR TACH SENSOR AT TOP OF FLYWHEEL HOUSING TO ROTATE FLYWHEEL RING GEAR WITH LARGE SCREWDRIVER, FIGURE 2.

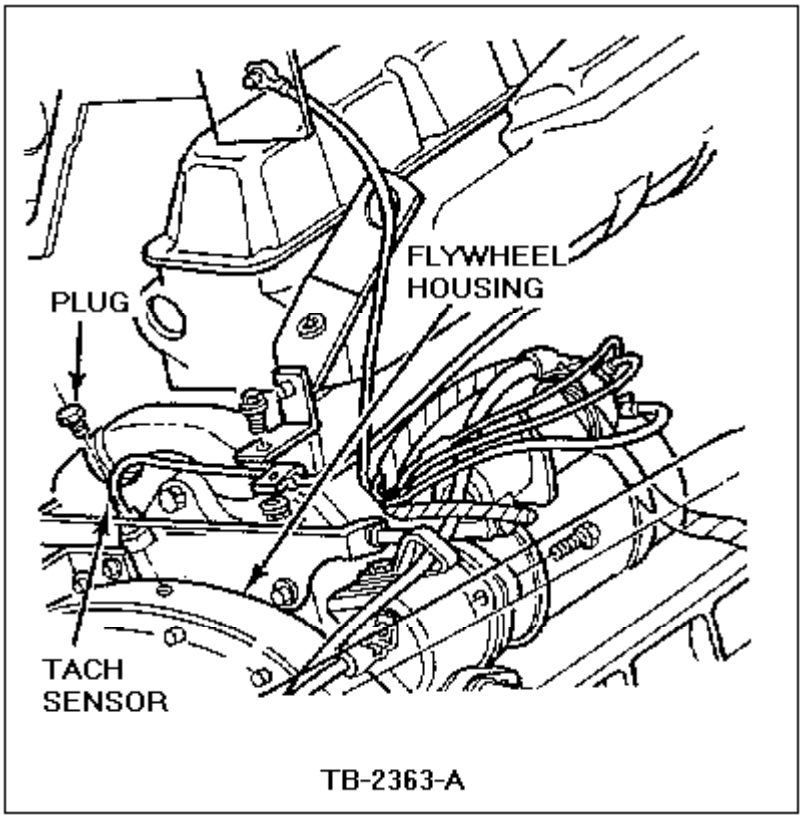


Figure 2 - Article 92-1-10

3. Insert the Injection Pump Aligning Pin (T91T-9000-A) through the gear plate, gear, hub and into the inner timing plate hole, Figure 3.

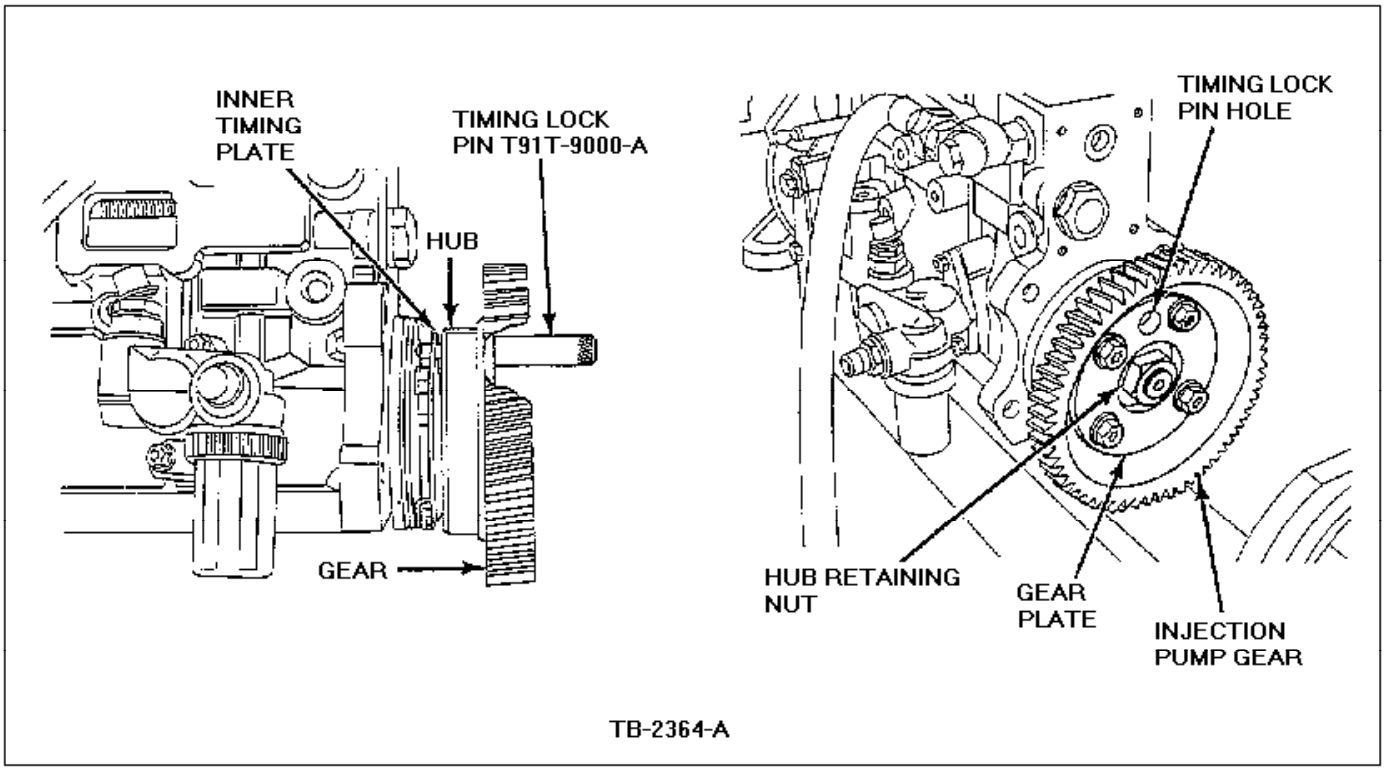


Figure 3 - Article 92-1-10

CAUTION:
THE TIMING PIN SHOULDER SHOULD SEAT AGAINST THE GEAR PLATE FACE WHEN THE PIN

IS PROPERLY AND FULLY SEATED IN THE TIMING PLATE HOLE. THIS VERIFIES PROPER ENGINE TIMING.

4. Loosen the four (4) pump gear bolts, finger loose, so the plate can rotate from the gear.

5. Loosen the damper timing bracket at the front cover.

6. Insert a pointer into the hole in the front cover (.125"/3.175mm), adjacent to degree marks on damper.

7. Rotate the engine counterclockwise until it lightly contacts the pump timing pin.

8. With the injection pump timing pin still in place, carefully rotate the engine clockwise until the pointer installed in Step #6 indicates new timing mark from the following MFM07.8FPK8 Engine Family Timing Chart.

NOTE:
THERE IS SUFFICIENT CLEARANCE BETWEEN THE GEAR HOLES AND THE BOLTS TO ALLOW MOVEMENT WITHOUT BINDING ON THE BOLTS. STEP #8 HAS ADVANCED THE STATIC TIMING TO THE NEW STATIC TIME AS SHOWN IN THIS CHART.

9. Turn the gear counterclockwise by hand to remove any backlash.

   a. Tighten the four (4) bolts to 5 lb-ft (7N-m).

   b. Remove the pump timing pin.

   c. Tighten the four (4) bolts to 38-52 lb-ft (52-70N-m).

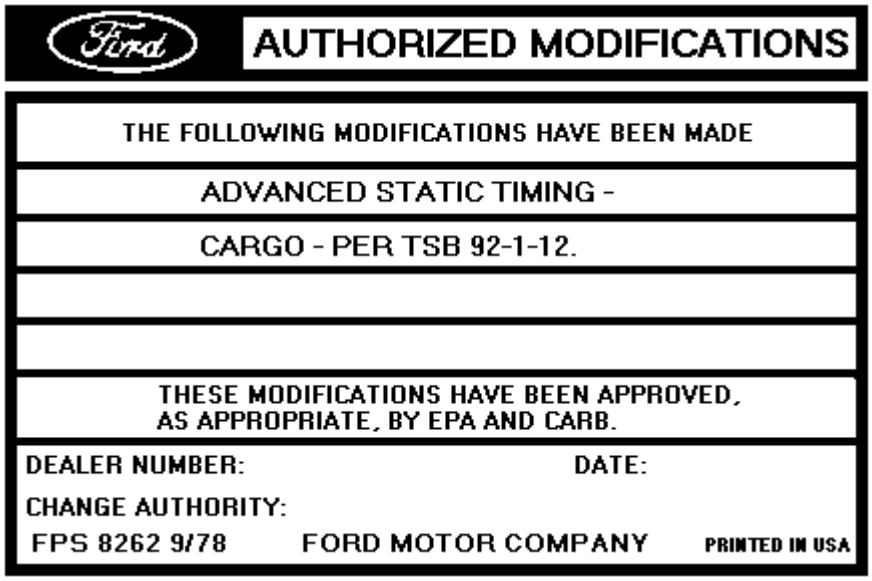
   NOTE:
   PREVENT THE GEAR FROM ROTATING WHILE TIGHTENING THE GEAR BOLTS TO THE FINAL TORQUE VALUE.

10. With the timing lock pin in the damper slot, tighten the timing bracket bolts to 7 lb-ft (9N-m).

11. Remove the damper aligning pin.

12. Scribe a mark aligning the bracket to the front cover.

Obtain an Authorized Modifications Decal and list the date, dealer number, and summary of alterations performed. Select a prominent place adjacent to the Vehicle Emission Control Information Decal suitable for installing the Authorized Modifications Decal. Clean the area, install the decal, and cover it with a clear plastic decal shield.



OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under California Emissions Warranty Coverage, Basic Warranty Coverage, Powertrain Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 403000, 609000, 609400, 609500, 611000, 611500

Bulletin Contents

TSB Article 92-1-11 has been superseded by Article 92-7-11.

92-2, ***Publication Date: JANUARY 16, 1992***

• **Lack Of Power - 6.6L Ford Diesel (Certified To 1990 Emission Standards) - Boost Control Device Adjustment Procedure** • **Poor Performance/Poor Response - 6.6L Ford Diesel (Certified To 1990 Emission Standards) - Boost Control Device Adjustment Procedure**	**Article No. 92-2-9**

MEDIUM/HEAVY TRUCK:
1991 CARGO SERIES, F & B SERIES, L SERIES

CALIBRATION:
0-80B-R00, 0-80A-R00

WARNING:
THIS MODIFICATION IS AUTHORIZED ONLY FOR THE LISTED ENGINE. PERFORMING THIS MODIFICATION ON OTHER ENGINE CALIBRATIONS IS UNAUTHORIZED AND COULD CREATE LIABILITY UNDER APPLICABLE FEDERAL OR LOCAL LAWS.

ISSUE:
Poor performance, poor response or lack of power may be caused by the boost control device (BCD) on the Bosch fuel injection pump not being properly adjusted.

ACTION:
Adjust the Bosch fuel injection pump BCD by using the following service procedure.

SERVICE PROCEDURE

The 1991 engines have the new single fuel filter/water separator with the BCD mounted at the top of the fuel injection pump governor assembly, Figure 1.

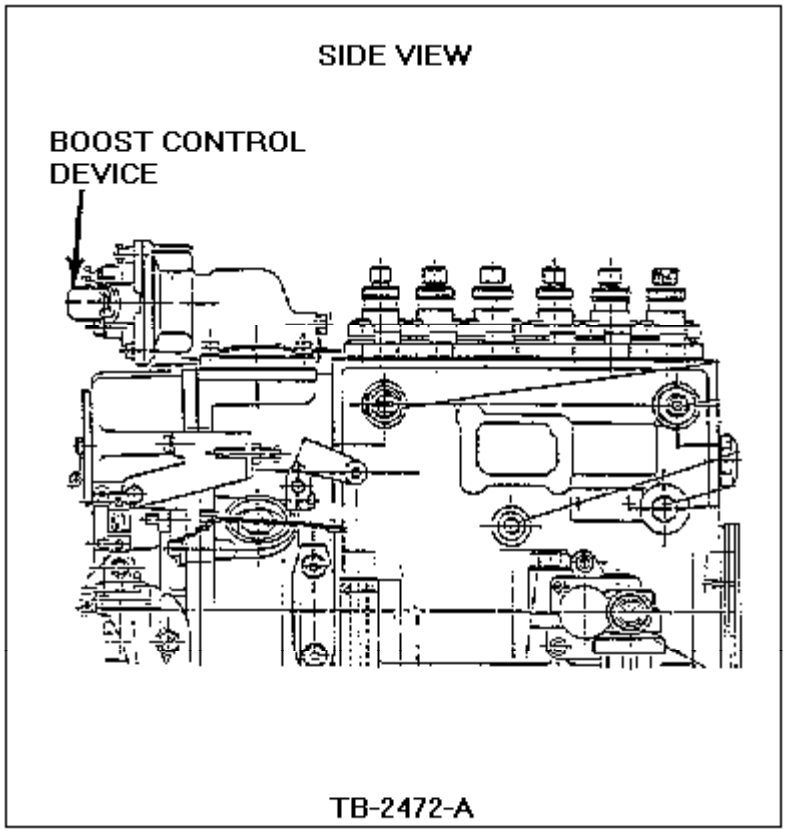


Figure 1 - Article 92-2-9

A change to the BCD adjustment of about 1/2 turn (20 clicks on the star wheel adjustment) can be made to improve performance on the following engines with automatic or manual transmissions.

1. Loosen the two (2) fuel filter/water separator low pressure fuel lines at the the injection pump.
    a. Remove the fuel filter/water separator assembly and the two (2) lines from the intake manifold.
    b. Cap all lines and openings at the fuel pump.
    c. For in-vehicle work, remove the air cleaner housing.
    d. Loosen the lower oil fill tube clamp at the block.
    e. Remove the upper bolt securing the oil fill tube to the engine.
    f. Rotate the tube clockwise as required to gain access to view the top of the BCD in the area of the wire sealed hex plug, Figure 2.

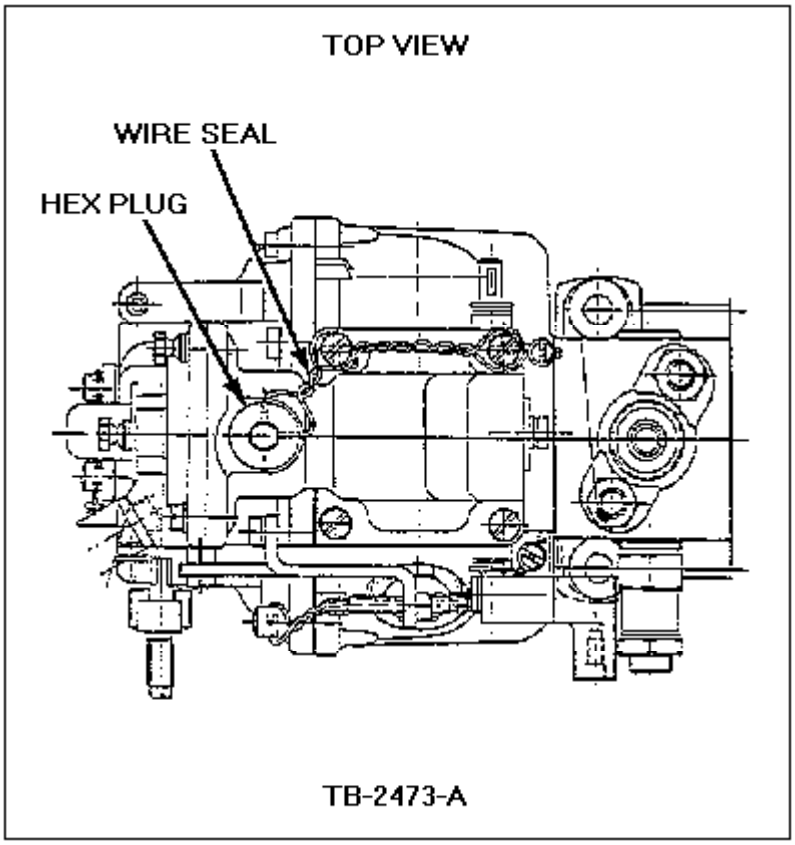


Figure 2 - Article 92-2-9

g. Retain all parts for reassembly.

2. Clip and remove the wire sealing the hex plug, Figure 2.

3. Remove the hex plug and seal washer using a 5/16" (9.938mm) hex wrench. Retain parts for reassembly.

NOTE:
WITH AN ADEQUATE LIGHT SOURCE, YOU WILL BE ABLE TO VIEW THE NOTCHED TOP EDGE OF THE BCD ADJUSTER SLEEVE, FIGURE 3.

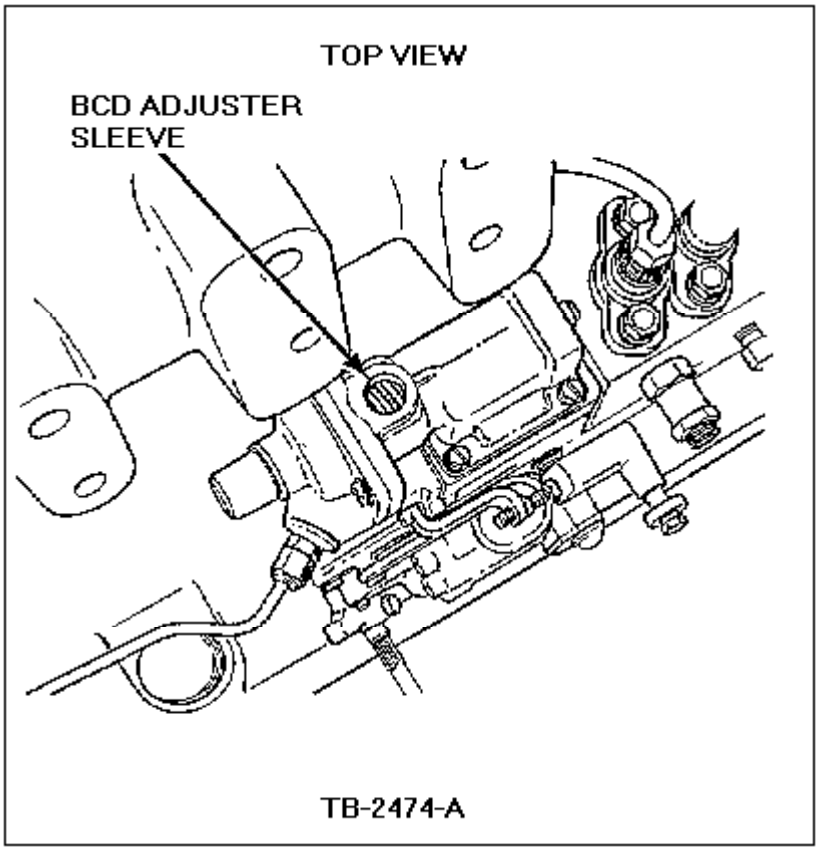


Figure 3 - Article 92-2-9

4. Apply a small amount of mineral spirits or Ford Metal Brake Parts Cleaner (E6AZ-19579-BA) to the notched edge on the BCD adjuster sleeve to remove oil, Figure 3.

5. Carefully place a small dot of bright yellow or white paint on the top edge of the most inboard adjuster sleeve tooth adjacent to the inboard edge of the hole. This is a marked reference point, Figure 3.

6. Using a screwdriver, rotate the adjuster sleeve five (5) full notches clockwise (outboard) as viewed from the rear of the pump, Figure 3.

7. Repeat Steps 4, 5 and 6 three more times. The adjusting sleeve has now been moved a total of 20 notches clockwise from its original position as viewed from the rear of the pump, Figure 3.

8. Reassemble the hex plug. Tighten it to 20-25 lb-ft (27-34 N-m).

9. Reseal (wire) the hex plug as shown in Figure 2.

10. Reassemble all parts to the engine per the 1991 Service Manual instructions.

11. Prime the fuel system as shown in Figure 4.

BLEEDING FUEL SYSTEM OR RESTARTING AFTER RUNNING OUT OF FUEL

Restarting an engine that has been run out of fuel is made difficult by the fact that after fuel is exhausted from the fuel tank, air then enters the sediment bowl, fuel filter/water separator and the fuel supply becomes insufficient to sustain engine firing. These assemblies must be refilled with fuel and the fuel lines purged of air before the system can provide adequate fuel to the injectors to start the engine.

Follow these steps in restarting a fuel-depleted engine:

1. Fill the fuel tank with clean fuel. If only partial filling of the tank is possible, add a minimum of five gallons of fuel to assure priming can be achieved and the engine run for a short time.
2. Purge the air from the fuel system as follows:

- Depress primer button until effort to stoke primer increases, then stroke an additional 15 strokes - approximately 60 strokes total.

NOTE: If the primer will not pump fuel, there is either an air leak in the system or the primer is malfunctioning.

- Open fuel filter vent screw until fuel and air bubbles appear. Allow 1-1/2 - 2 minutes bleed time until air bubbles and fuel flow ceases and the fuel system has lost its pressure. During this period, air is "back flowing" from the injection pump.
- Close filter bleed screw.

CAUTION: Check vent screw after engine starts to assure there are no fuel leaks.

- Stroke primer 10 times.

3. Start engine as follows:

- Crank engine and while cranking, depress accelerator pedal to floor.
- Engine should start in 3 to 8 seconds of cranking, run rough for 5-10 seconds and will either smooth out or stall. (Note: Keep acceleration to floor during rough running until clear and running smooth, then throttle back.)
- If stall occurs, up to 15 seconds of additional cranking may be required to restart engine without additional priming.
- If engine does not start, repeat Steps 2 and 3 to clear additional air from fuel system and start engine.

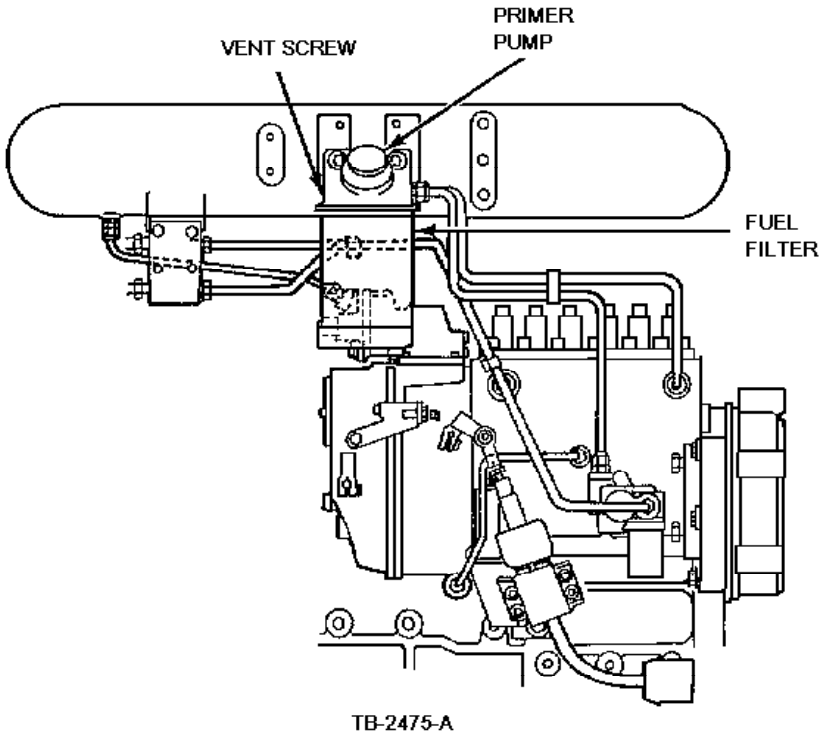
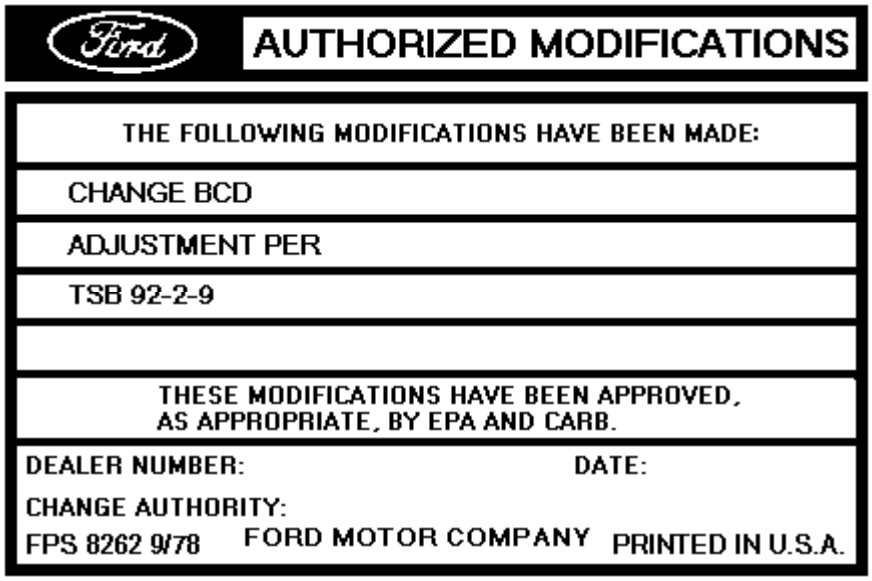


Figure 4 - Article 92-2-9

12. Run the engine and check for leaks in the fuel and air intake systems.

Obtain an Authorized Modifications Decal and list the date, dealer number, and summary of alterations performed. Select a prominent place adjacent to the Vehicle Emission Control Information Decal suitable for

installing the Authorized Modifications Decal. Clean the area, install the decal, and cover it with a clear plastic decal shield.



OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under California Emissions Warranty Coverage, Powertrain Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 614000, 614500, 614600

92-2, ***Publication Date: JANUARY 16, 1992***

• **Cooling System - Loose Charge-Air-Coolers - Vehicles With Plastic Ad-Tech Radiators** • **Radiator - "Ad-Tech" - Loose Charge-Air-Coolers**	**Article No. 92-2-10**

MEDIUM/HEAVY TRUCK:
1987-91 L SERIES

ISSUE:
The Charge-Air-Cooler (CAC) may be loose in the "AD-TECH" cooling module assembly. This looseness, evident by being able to move the CAC front-to-back by hand in the assembly, may result in eventual damage to the CAC and/or the CAC mounting system.

ACTION:
If service is required, use the following procedure to secure the Charge-Air-Cooler.

SERVICE PROCEDURE

1. Determine if the CAC is loose by attempting to move the CAC front-to-back by hand.

   NOTE:
   THIS PROCEDURE IS DESIGNED TO BE ACCOMPLISHED WITHOUT REMOVING THE COOLING MODULE FROM THE VEHICLE OR DISASSEMBLING THE MODULE.

2. Inspect the entire cooling module for damage/looseness and correct as necessary.

   a. Confirm that the "tie-rods" (the two long rods that run top-to-bottom through the assembly) are tight.

   b. If the module is disassembled for any reason or if the "tie-rods" are loose, reassemble the module in accordance with TSB 90-05-16.

   c. Make sure to include any shims which were originally included to retain the CAC. (Cooling modules were assembled with either zero, one or two shims.)

3. If the CAC is loose, proceed as follows:

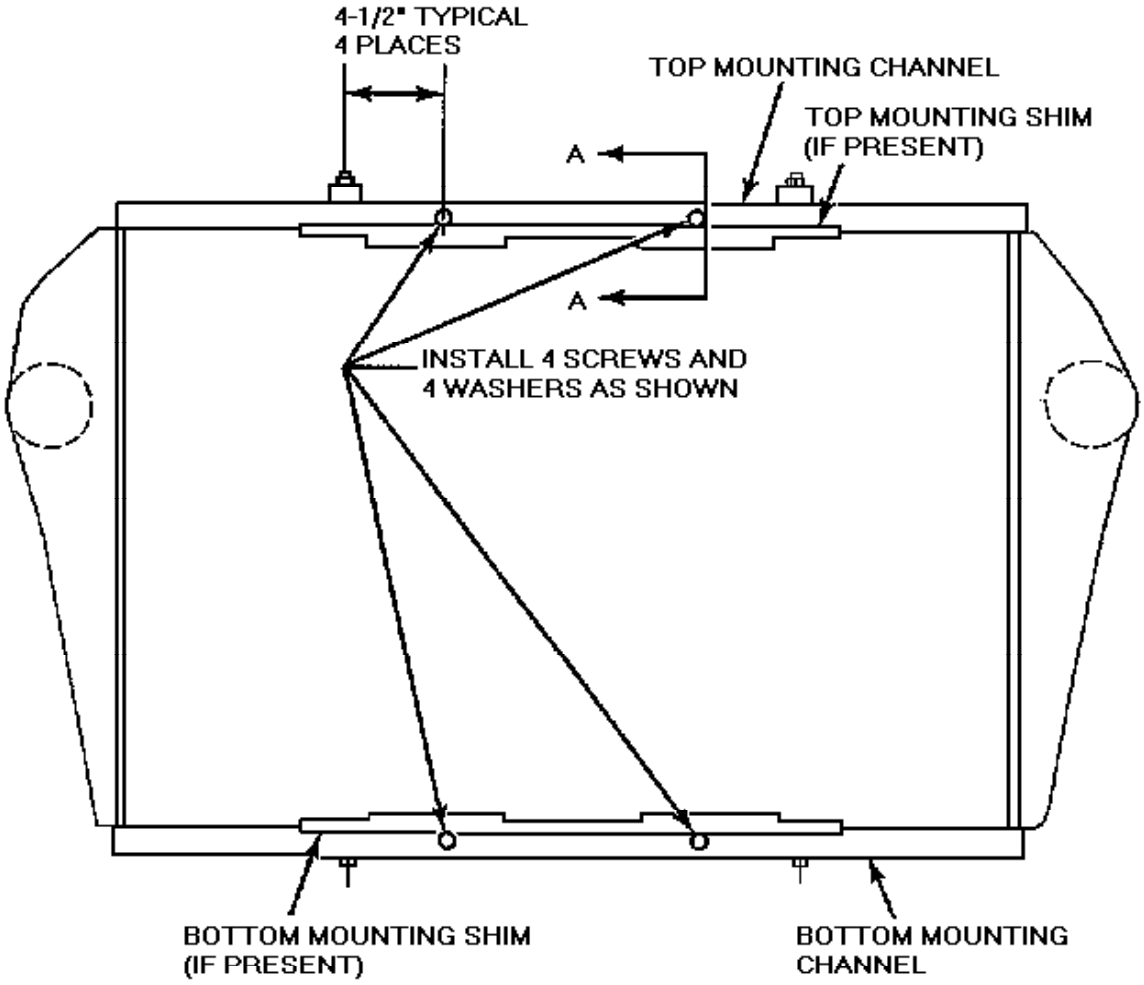
   a. Center the shim(s), if present, side-to-side in the top and/or bottom mounting channel(s).

   b. Pull the CAC as far forward in the cooling module as possible.

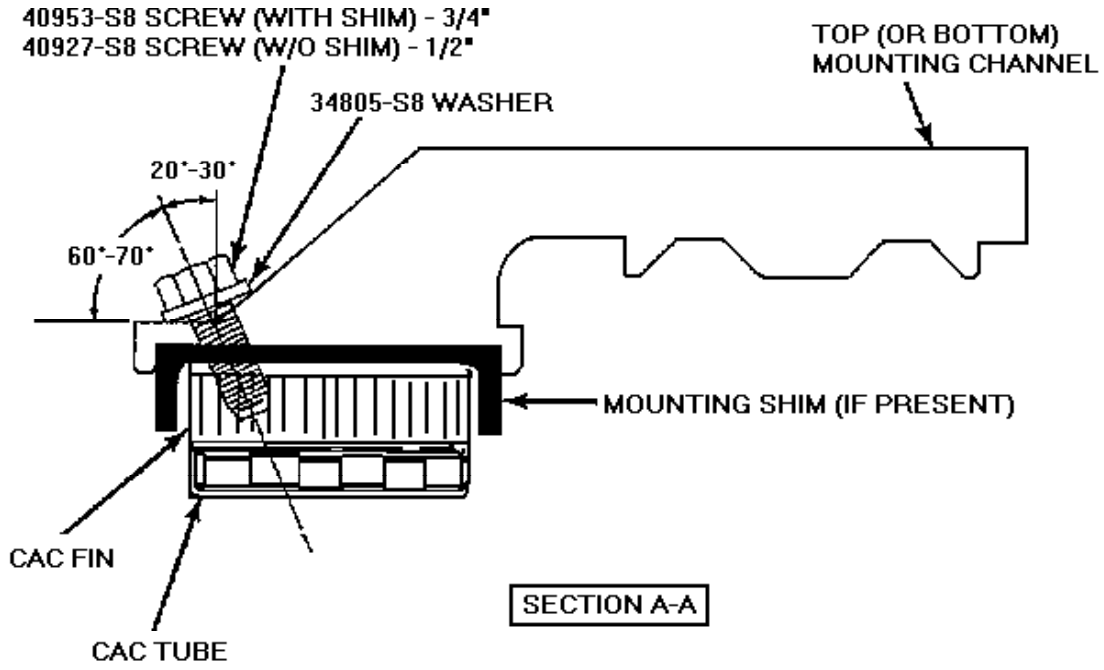
      NOTE:
      THE BOTTOM BRACKETS OF THE AIR CONDITIONING CONDENSER, IF PRESENT, MAY NEED TO BE PULLED FORWARD SLIGHTLY IN ORDER TO CLEAR THE COOLER IN ITS FORWARD POSITION.

4. In the four locations shown in Figure 1, drill a 13/64" (5.159mm) hole through the mounting channel, the shims (if present), and the CAC "side piece". The "side piece" is actually the top or bottom surface of the CAC.

INSTALLATION SCHEMATIC
CHARGE AIR COOLER MOUNTING SCREWS



VIEW FROM FRONT OF VEHICLE



SECTION A-A

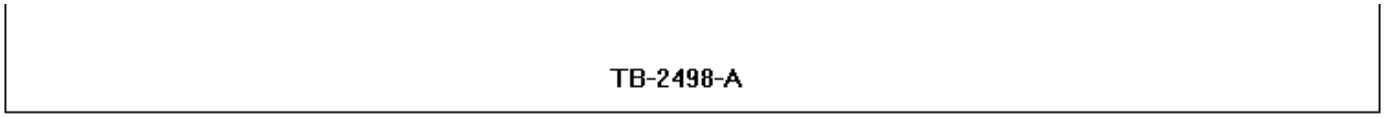


Figure 1 - Article 92-2-10

CAUTION:
USE A COLLAR OR OTHER POSITIVE STOP ON THE DRILL BIT IN ORDER TO KEEP IT FROM PUTTING A HOLE IN THE CAC TUBE.

NOTE:
THERE IS NO HARM IN DRILLING INTO THE FIRST FIN ROW OF THE COOLER.

5. Install a 1/4"(6.35mm) diameter thread-cutting screw with a split lockwasher (34805-S8) in each of the holes, Figure 1.

   a. Use a 3/4"(19.05mm) long screw (40953-S8) where the hole goes through a shim.

   b. Use a 1/2"(12.7mm) long screw (40927-S8) where there is no shim.

   CAUTION:
   USE OF LONGER SCREWS WILL DAMAGE THE CAC!

6. Tighten the screws to 100 lb-in (11N-m).

OTHER APPLICABLE ARTICLES:

90-5-16

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 402000, 499000

92-3, ***Publication Date: JANUARY 29, 1992***

• **Glass - Side Window - Turning Vane Service Kit To Reduce Window Splash/Spray-Dirt Buildup** • **Mirror - Side Window - Turning Vane Service Kit To Reduce Window Splash/Spray-Dirt Buildup**	**Article No. 92-3-12**

MEDIUM/HEAVY TRUCK:
1992 and prior L SERIES

ISSUE:
A turning vane service kit is now available to reduce side window splash/spray-dirt buildup.

ACTION:
Install a turning vane service kit (FOHZ-80201K56-A) on the side window mirrors to reduce splash/spray-dirt buildup. Follow the installation instructions provided with the service kit.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 102000, 103000

92-4, ***Publication Date: FEBRUARY 12, 1992***

• **Loss Of Power - Cat 3406 - Incorrect Hot Side Adapter** • **Engine - Cat 3406 - Air Intake - Potential Interference Between The Hood Inner Panel And The Hot Side Adapter**	**Article No. 92-4-16**

MEDIUM/HEAVY TRUCK:
1992 LLA-9000, LLS-9000, LTLA-9000, LTLS-9000

This article is being republished in its entirety to update the vehicle model years.

ISSUE:
A loss of power may be experienced because an incorrect hot side adapter was installed in production. Between Job #1 1991 1/2 and June 24, 1991, some 1992 LLS and LTLS-9000 trucks with Cat 3406 engines were assembled with an incorrect hot side adapter. This adapter prevents the hood from closing properly and could make the seal between the hood inner panel and the air cleaner inoperative. Consequently, the engine will be supplied with hot under-hood air which may result in engine power loss.

ACTION:
Inspect the engine air intake system for installation of the proper hot side adapter, refer to figure 1. If the incorrect part is found, replace it with the correct part shown in the following Hot Side Adapter Chart. Refer to the 1992 L-Series Shop Manual, Section 03-03 page 35, for service details.

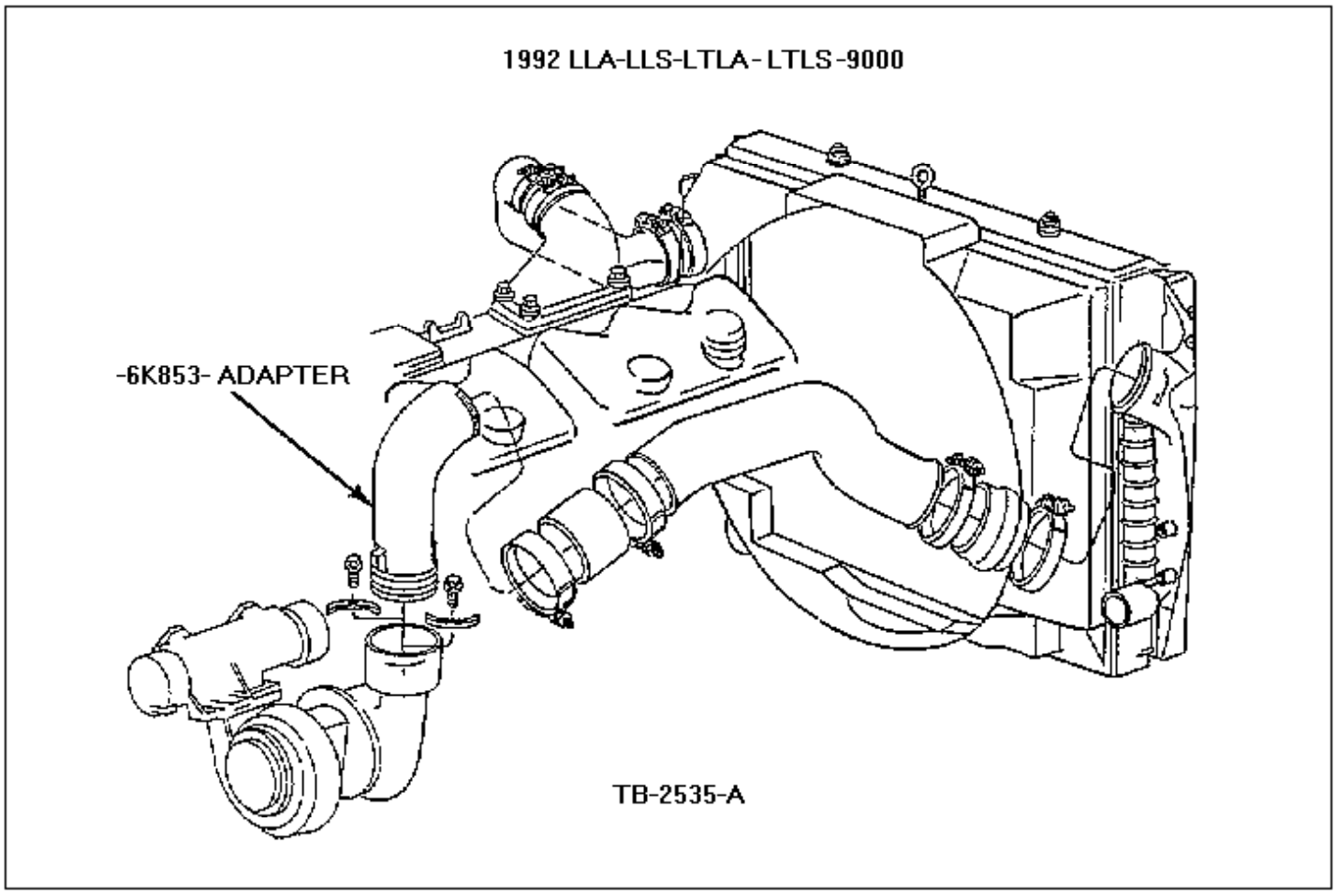


Figure 1 - Article 92-4-16

SUPERSEDES: 91-21-15

WARRANTY STATUS: Eligible Under Basic Warranty Coverage, Emissions Warranty Coverage, Powertrain Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 499000, 614000, 614500

92-5, ***Publication Date: FEBRUARY 26, 1992***

Paint - New Identification Labels For Paint Code Changes	**Article No. 92-5-2**

FORD:
1992 and after CROWN VICTORIA, ESCORT, MUSTANG, TAURUS, TEMPO, THUNDERBIRD

LINCOLN-MERCURY:
1992 and after CONTINENTAL, COUGAR, GRAND MARQUIS, MARK VII, SABLE, TOPAZ, TOWN CAR, TRACER

LIGHT TRUCK:
1992 and after ALL LIGHT TRUCK LINES

MEDIUM/HEAVY TRUCK:
1992 and after ALL MEDIUM/HEAVY TRUCK LINES

ISSUE:
A new special paint identification label has been designed to identify R.P.O. paint code changes on the subject vehicles not reflected on the certification label. Examples of paint changes are...

- Running color changes during the model year, where a monocoat paint was changed to basecoat/clearcoat
- Future model color is in a preproduction color trial

ACTION:
If paint service is required, refer to this special paint identification label affixed near the certification label to find the Ford "M" number and the two digit sales code, Figure 1. This label is for short run use only until certification labels can be changed. This process is automated and takes approximately two (2) weeks time. Aftermarket paint suppliers can track colors by either of the provided codes.

Figure 1 - Article 92-5-2

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 106000

Bulletin Contents

TSB Article 92-5-99 has been superseded by Article 92-11-17.

92-6, ***Publication Date: MARCH 11, 1992***

• **Paint - Iron Particle Removal Procedure** • **Paint - Rough Texture And/Or Orange/Rust Dots Due To Iron Particles**	**Article No. 92-6-4**

FORD:
1992 and after CROWN VICTORIA, ESCORT, FESTIVA, MUSTANG, PROBE, TAURUS, TEMPO, THUNDERBIRD

LINCOLN-MERCURY:
1992 and after CAPRI, CONTINENTAL, COUGAR, GRAND MARQUIS, MARK VII, SABLE, TOPAZ, TOWN CAR, TRACER

LIGHT TRUCK:
1992 and after AEROSTAR, BRONCO, ECONOLINE, EXPLORER, F SUPER DUTY, F-150-350 SERIES, RANGER

MEDIUM/HEAVY TRUCK:
1992 and after CARGO SERIES, F & B SERIES, L SERIES

ISSUE:
Hot iron dust particles from such sources as railroad wheels may imbed themselves into the surface of the paint. On some light colored vehicles, after some weathering, tiny dots of orange rust may start to appear. They feel rough to the touch and are difficult to remove.

ACTION:
To remove these particles, USE ONLY the following procedure. The materials in this procedure are alkaline, acidic and neutral. They must be used in the specified order. Any changes to this procedure will cause an unsatisfactory repair or possible damage to the painted surfaces.

SERVICE PROCEDURE

NOTE:
THIS TSB ARTICLE SUPERSEDES PAINT REPAIR TOPIC "A" OF TSB ARTICLE 91-18-1. THE REMAINING PART OF TSB 91-18-1 IS STILL VALID.

CAUTION:
THE USE OF ANY OTHER PRODUCT OR PROCEDURE MAY CAUSE DAMAGE TO ALUMINUM PARTS OR PAINTED SURFACES. RINSE THOROUGHLY AFTER APPLICATION.

WARNING:
THE TECHNICIAN MUST WEAR PROTECTIVE CLOTHING AND EYE PROTECTION TO PREVENT SKIN IRRITATION.

1. Rinse the vehicle to remove unwanted dirt and dust,then proceed as follows:

   a. Mix Finish Kare #1119 Soil and Coating Remover, 1 part #1119 to 4 parts of cold water.

   b. Use a clean wash mitt and apply the mixture to the entire vehicle. Keep the surfaces wet for 5 to 10 minutes.

CAUTION:
<u>DO NOT</u> ALLOW THE MIXTURE TO DRY OR STREAK DOWN THE SIDES OF THE VEHICLE. REMITT TO AVOID STREAKS AND DRYING.

c. Rinse with cold water.

d. Make sure the vehicle is clean and dry.

e. Using a dry wash mitt or sponge, apply Finish Kare #833 Rust Remover or equivalent directly to the surface on one panel at a time.

f. Keep the area wet for up to 5 minutes.

2. Rinse the surface with a strong jet of water to completely remove the particles.

3. If the particles are not completely removed, repeat Steps 1 and 2 again.

4. After the iron particles are removed, apply Finish Kare #118SC Liquid Neutralizer Concentrate Shampoo or equivalent. This is required to neutralize the removal action.

   a. Mix the concentrate at 1 part concentrate to 100 parts water.

   b. Apply the neutralizer shampoo with a mitt or sponge.

   c. Rinse with clean water.

   NOTE:
   THE NEUTRALIZER CONCENTRATE IS A HEAVY DUTY SHAMPOO AND CAN BE USED IN AN AUTOMATIC CAR WASH SYSTEM.

5. If fine scratches appear on the surface, use availabe aftermarket light "finessing" compounds with a foam pad to remove scratches.

6. Polish as necessary.

<u>FINISH KARE PRODUCTS</u>

Finish Kare products are marketed by mobile distributors which will deliver the products directly to your dealership. If a Finish Kare distributor is not located in your area, Finish Kare can be contacted at the address and phone number below for direct shipment from their national office. In the case of direct shipment, a product training video and manual will be provided with the shipment.

- Finish Kare Products, Inc., 1726 Floradale Ave., El Monte, CA 91733
- Telephone Number: (213) 686-0462

<u>FINISH KARE DISTRIBUTORS</u>

Refer to Figure 1 for a list of Finish Kare Distributors in the U.S. and Canada.

FINISH KARE DISTRIBUTORS

ALASKA
Alaska Auto Preservation
3200 Seward Highway
Anchorage, Alaska 99503
(907) 272-1366 Herb Worthly

ARIZONA
Teteak Distributing
4444 N. 47th Pl.
Phoenix, AZ 85018
(602) 952-8024 Jim Teteak
(602) 226-8693 Pager

CALIFORNIA
Deifel Paint & Supply
1030 Alta Vista Dr.
Bakersfield, CA 93305
(805) 325-7201 Greg

S.C. Finish Kare
2639 N. Grand Ave. Suite 112
Santa Ana, CA 92701
(714) 771-0258 Nick

Bay Area Finish Kare
4024 W. Las Positas Ave.
Pleasanton, CA 94588
(415) 417-1074 FAX
(415) 417-1049 Emie Zuccato

R & S Sales
601 William
Madera, CA 93637
(209) 674-7210 Ray

CANADA
Canadian Auto Preservation
351 N. Rivermede Rd. Unit 4
Concord, Ontario, Canda L4K 3N2
(416) 798-7511 Randy or Sam
(416) 660-9615

COLORADO
Crest Industries
4200 Jackson St.
Denver, CO 80216
(303) 320-3900 Bill Cain

W.S.E. Inc.
P.O. Box 9323
Denver, CO 80209
(303) 722-1817 Dean Stone

FLORIDA
After-Market Services
6247 Bennett Rd.
Jacksonville, FL 32216
(904) 731-3524 Kevin McCabe

Auto Restoration of Florida
1760 Florida Ave.
Palm Harbor, FL 34683
(813) 785-3150 Gary Souder

HAWAII
Finish Kare Hawaii
3375 Koapaka #350
Honolulu, HI 96819
(808) 837-7770 Dave Fleming

KANSAS
Finish Kare Auto Products
Suite A-B-C
2422 South Seneca
Wichita, KS 67217
(316) 263-5600 Dave McDavitt

MICHIGAN
Mazda Great Lakes
618 Kenmoor Ave.
Grand Rapids, MI 49506
(616) 949-7570 Ken Postma

MISSISSIPPI
Auto Pak
Route 7, Box 37
Jackson, MS 39209
(601) 924-0015 John Howard

MISSOURI
Crest Industries
10888 Indian Head In. Blvd.
St. Louis, MO 63132
(314) 423-4080 Mike Garlik

NEBRASKA
Jim Drake Chemical Sales
3937 South 42nd St.
Lincoln, NE 68506
(402) 489-8769 Jim Drake

NEW JERSEY
Auto Service Supply
91 Birch Parkway
Sparta, NJ 07871
(201) 729-7815 Doug Mann

NEW YORK
Costal Chemical Supply
106 Pickard Dr.
Mattydale, NY 13211
(315) 454-0080 Doug Profitt
(315) 682-5942 FAX

NORTH CAROLINA
Carolina Finish Kare
923 Oak Ridge Drive
Mooresville, NC 28115
(704) 664-9611 Greg

OHIO
Auto Preservation
Waxoyl Car Kare Products
6949 East Kemper Rd.
Cincinnati, OH 45249
Local 489-7885 Trey Hallberg
1-800-543-8324 Wayne J. Eko

PENNSYLVANIA
MG Reconditioning
756 Ashland Ave.
Eddystone, PA 19013
(215) 876-6281 Norm Larson

TEXAS
Pro-Chem of DFW
1802 Hickory Dr.
Fort Worth. TX 76117
(817) 831-2868 Marty David,
Brett Moreland
(817) 831-2870 FAX

Davco/American
434 Mira Mar Place
Corpus Christi, TX 78411
(512) 854-9303 Doug Davis

VIRGINIA
Auto Wizard
14303 J. Sullyfield Circle
Chantilly, VA 22021
(703) 802-0000 Don Ballard

WASHINGTON
Finish Kare Northwest
2138 49th Ave. S.W.
Seattle, WA 98116
(206) 938-5616 Russ Dow

WISCONSIN
C.C.S. Distributing, Inc.
1280 Otter Dr.
Altoona, WI 54720
(715) 834-7080 Gary Soley

Classic Care Products
4817 64th Ave.
Kenosha, WI 53141
(414) 658-4454 Tom Brown

Figure 1 - Article 92-6-4

OTHER APPLICABLE ARTICLES:

91-18-1

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 106000

Transmission - Manual - Shift Linkage Binds - Improper Adjustment	**Article No. 92-7-11**

MEDIUM/HEAVY TRUCK:
1986-91 CARGO SERIES

This TSB article is being republished in its entirety to clarify the technical information for obtaining the gauge pin used for the transmission linkage adjustment.

ISSUE:
Occasional complaints have been received of having difficulty when shifting manual transmissions, due to binding in the shift linkage.

ACTION:
Check the shift linkage and, if necessary, adjust it according to the following service procedure.

SERVICE PROCEDURE

1. Shift the transmission into neutral, Figure 1.

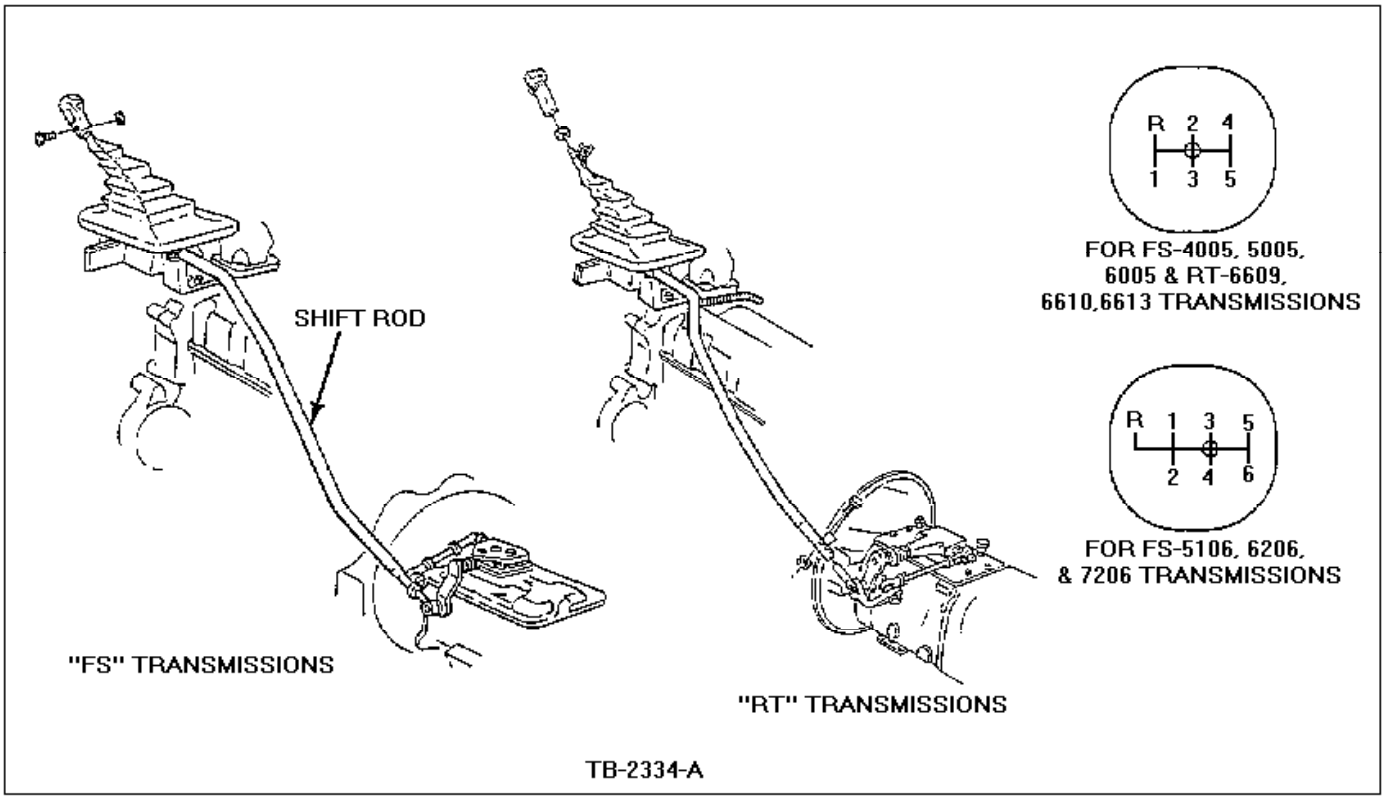


Figure 1 - Article 92-7-11

2. Loosen the nut and bolt attaching the shift rod to the shift lever yoke. Confirm free movement of the rod, Figure 2.

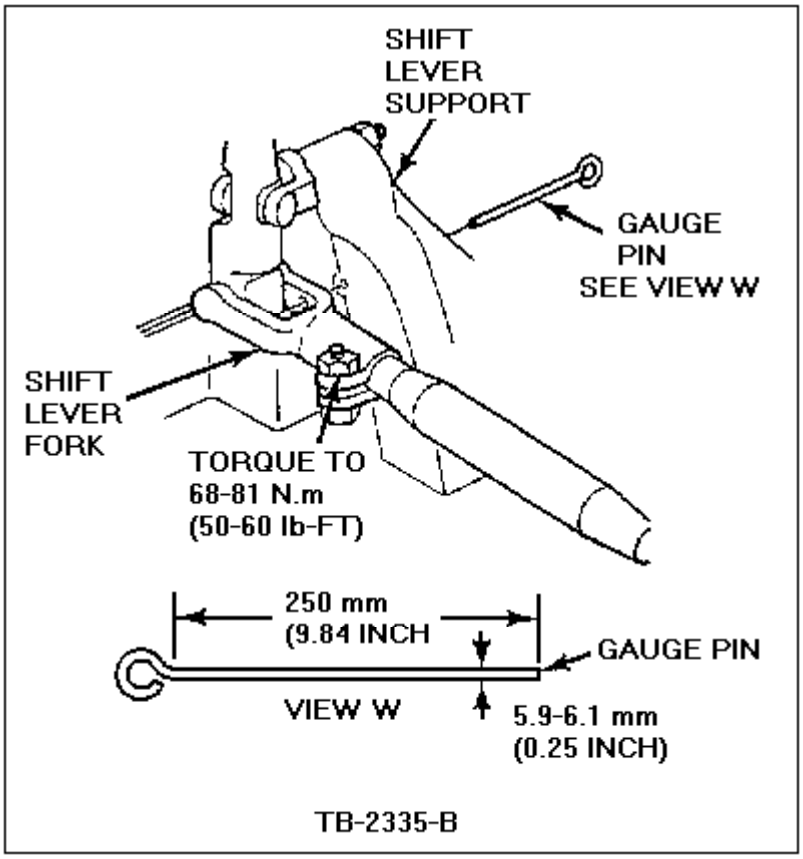


Figure 2 - Article 92-7-11

3. Lock the shift lever in place by inserting a gauge pin through the existing holes in the shift lever support and shift lever fork, Figure 2. The gauge pin can be made from 5.9/6.1mm or 1/4" diameter wire.

4. Position transmission shift lever at the neutral point of the following positions.

   - For FS-4004/5005/6005 and RT-6610/6613 - 2nd/3rd gear rail
   - For FS-5106/6206/7206 - 3rd/4th gear rail

   a. Rotate the shift rod counter-clockwise (as viewed from the rear) until resistance of the detent spring is felt.

   b. While holding in this position, tighten the nut to 50-60 lb-ft (68-81 N-m).

5. Remove the gauge pin.

6. With the engine OFF, shift the lever to all gear positions to ensure that all gears engage correctly. Readjust, if necessary.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 92-1-11

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 505000, 505200

92-8, ***Publication Date: APRIL 8, 1992***

Instrument Panel Gauges, Lights And Accessories "Flash" When Brake Pedal Is Pressed And 4-Way Flasher Is Activated - Vehicles Built Prior To 12/1/90	Article No. 92-8-14

MEDIUM/HEAVY TRUCK:
1991 L SERIES

ISSUE:
Instrument panel gauges, lights and accessories may flash when the brake pedal is pressed and the 4-way flasher is activated. They are not supposed to do this. The flashings may occur under the following conditions.

- Ignition in the "OFF" position
- Affected accessories "ON", but not active as key is "OFF"
- 4-Way flasher is "ON"
- Brake pedal is depressed

The accessories flash along with the 4-way flasher because of feedback through the brake circuit.

ACTION:
Install a jumper wire assembly (F2HZ-13A427-A) which isolates the 4-way flasher signal from the accessory feed circuit of air brake equipped L-Series trucks. Refer to Figures 1 and 2 for a pictorial of the wiring routes and connections and to Figure 3 for a comprehensive wiring schematic.

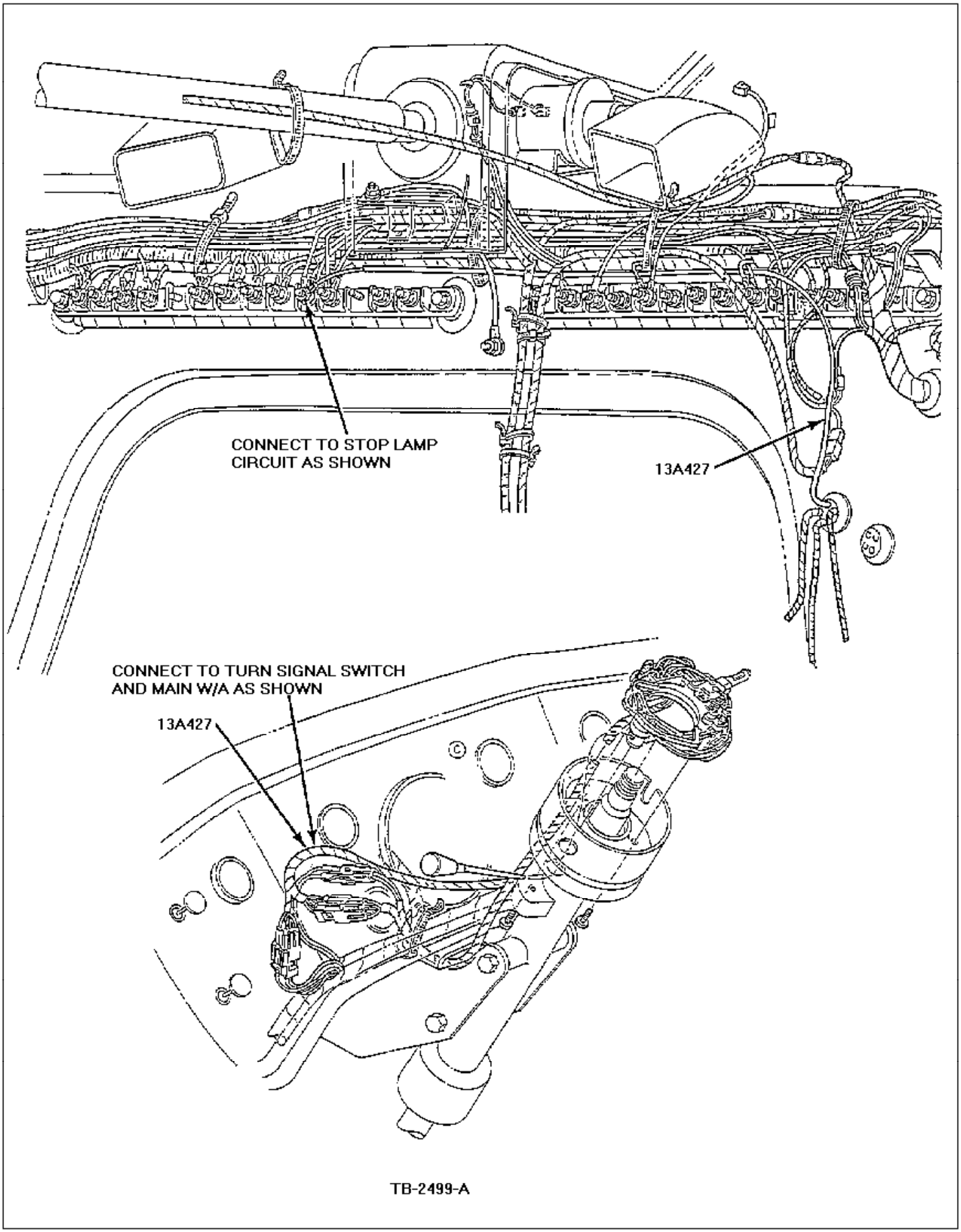


Figure 1 - Article 92-8-14

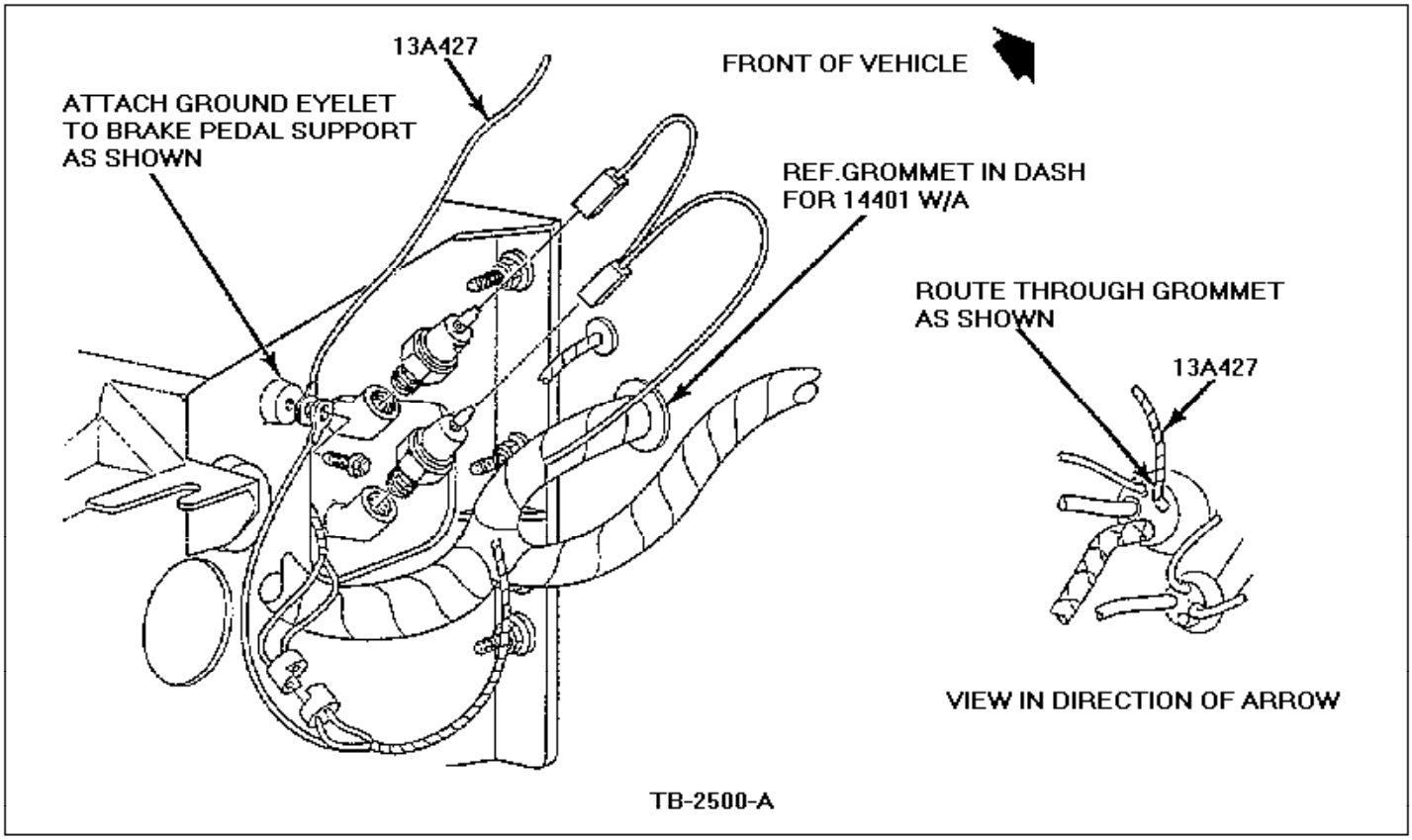


Figure 2 - Article 92-8-14

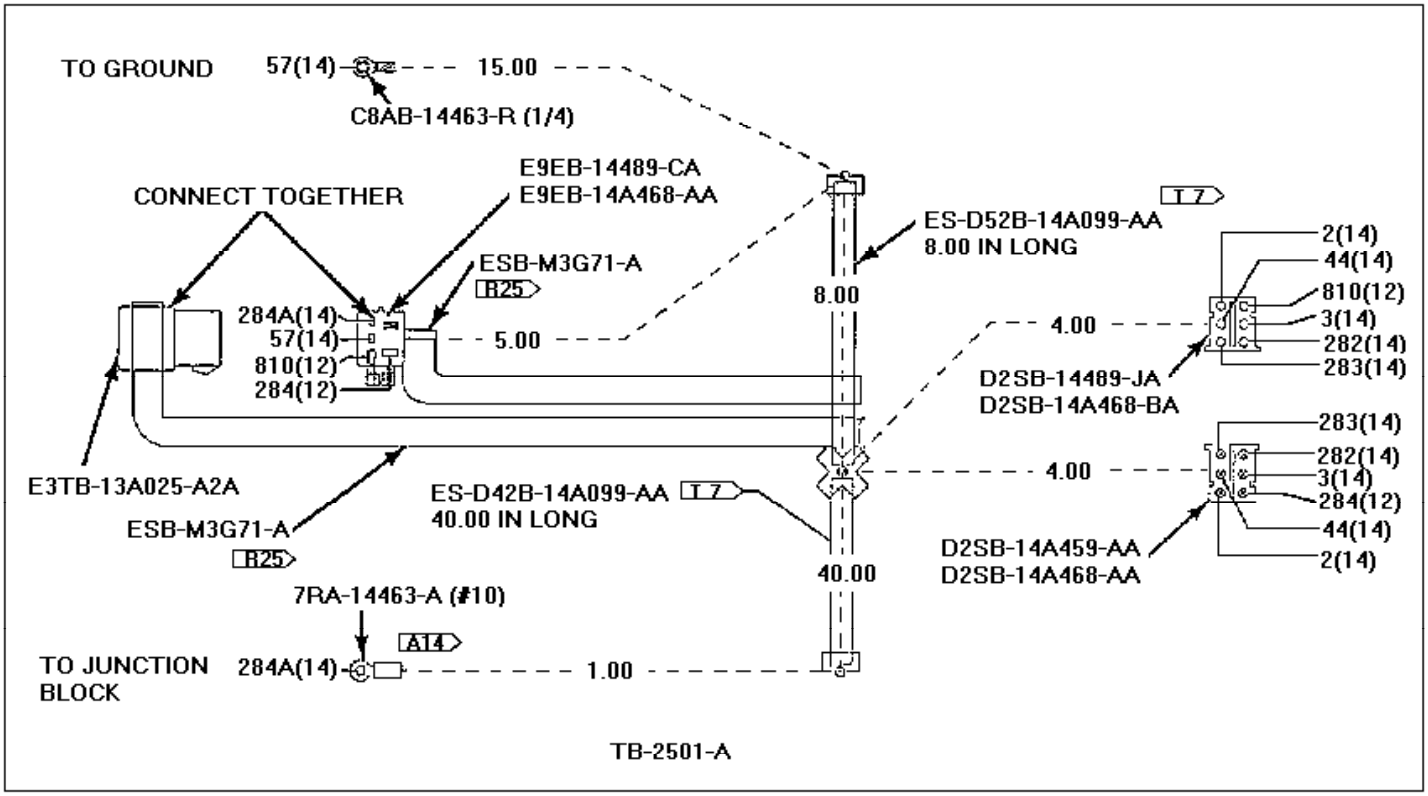


Figure 3 - Article 92-8-14

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 201000, 201100, 203000, 203200, 204000, 204200, 205000

92-9, ***Publication Date: APRIL 22, 1992***

Wiring - Stop Lamp Diode Location And Replacement Procedure - Vehicles Built Since 12/90 With Hydraulic Brakes	Article No. 92-9-17

MEDIUM/HEAVY TRUCK:
1991-92 F & B SERIES, L SERIES

ISSUE:
In December 1991, the stop lamp diode was revised from a "plug-in" to an integral "in-the-harness" component. Some difficulty may be experienced in locating the stoplamp diode in the subject vehicles. A procedure has been developed for replacing the diode without having to disassemble the harness to find the diode.

ACTION:
If service is required, use the following procedure to locate and replace the stop lamp diode.

DIODE INSTALLATION PROCEDURE - F-SERIES CAB AND COWL

1. Unscrew the fuse block mounts from the truck dash panel and rotate the fuse block to expose wires on the back of the block.

2. Remove the brake pedal wire harness connector from the stop lamp switch located behind the brake pedal arm.

3. Route the add-on diode jumper covered wire assembly (yellow end) through the instrument panel and above the bellows seal on the brake actuator, Figure 2.

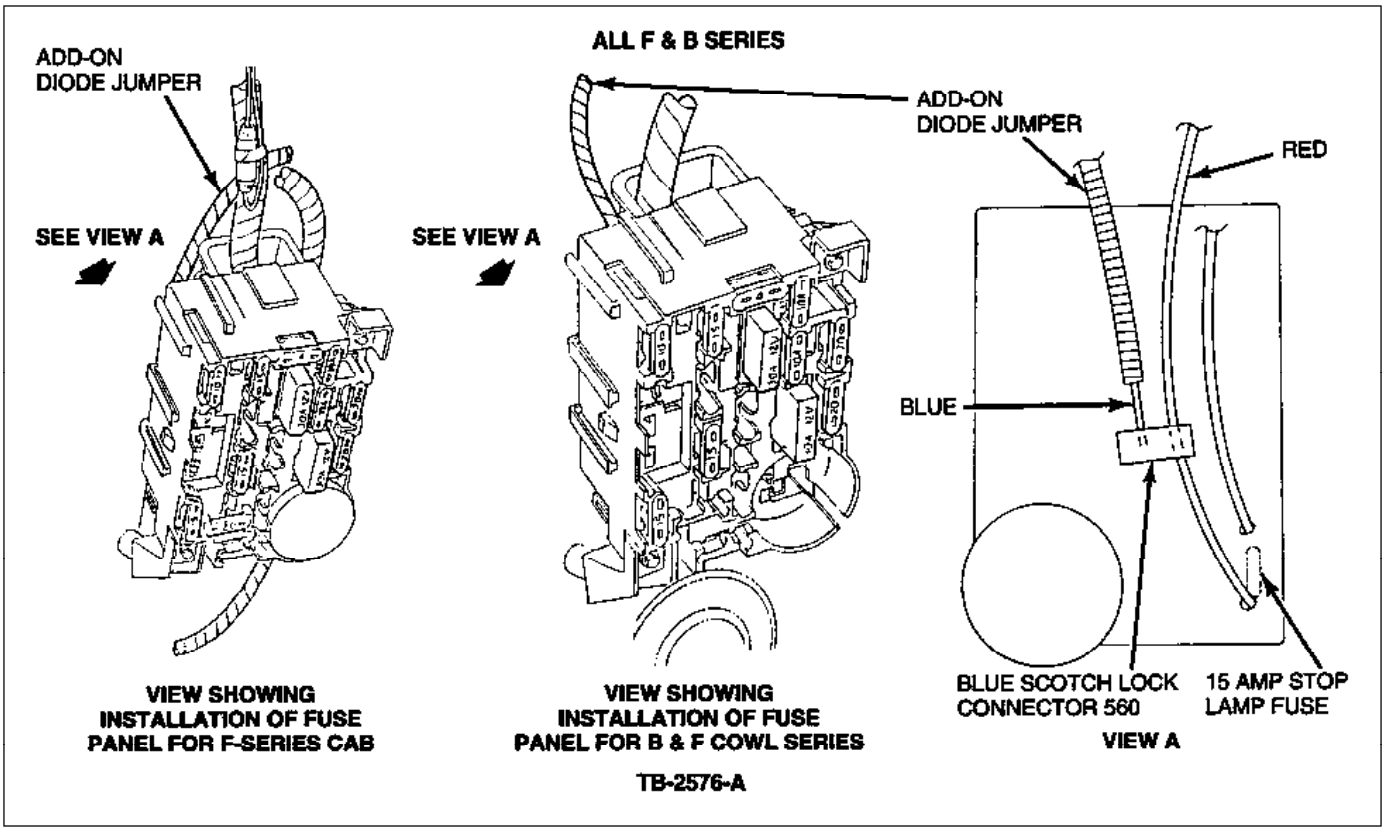


Figure 2 - Article 92-9-17

4. Install first connector.

   a. Attach a blue Scotch Lock connector #560 or equivalent onto the solid red wire behind the fuse block as shown in Figure 2.

      NOTE:
      MAKE SURE THE TAB OPENING IS DIRECTED UPWARD TOWARD THE MAIN WIRE ASSEMBLY (-14401-).

   b. Insert the blue end of the add-on diode jumper covered wire assembly into the blue Scotch Lock connector #560.

   c. Using Scotch Lock tool #E-9BM or adjustable pliers, squeeze the metal contact flush in the connector and close the plastic cover over the connector.

5. Install second connector.

   a. Attach a yellow Scotch Lock connector #562 or equivalent onto the red wire just behind the brake pedal connector as shown in Figure 1, View A.

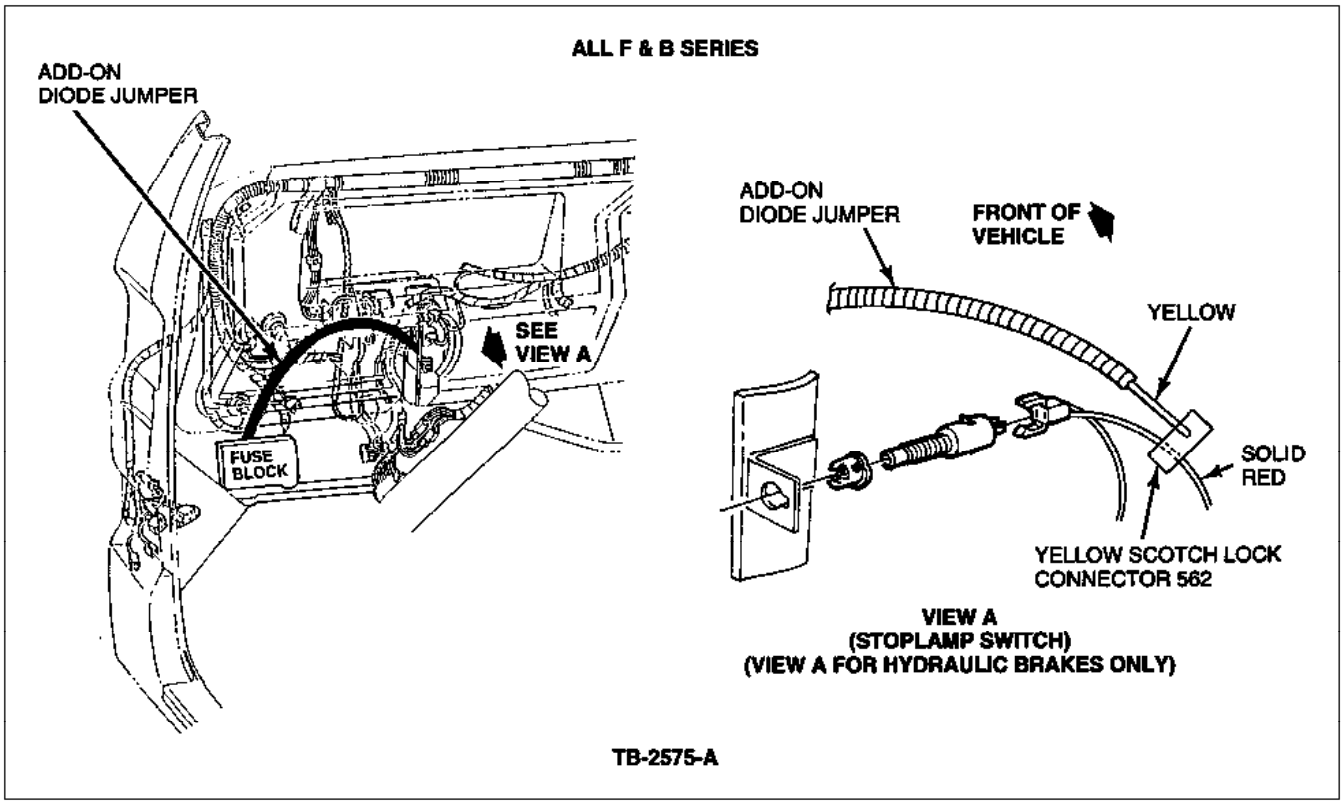


Figure 1 - Article 92-9-17

b. Insert the yellow end of the colored wire assembly into the yellow Scotch Lock connector #562.

c. Using Scotch Lock tool #E-9BM or adjustable pliers, squeeze the metal contact flush in the connector and close the plastic cover over the connector.

6. Install a wrap of 3/4" (19.1mm) wide blue colored tape to the -14401- wiring assembly on the outside of the wire trunk near the built-in diode to signify that this TSB service was performed.

7. Wrap the Scotch Lock connectors with electrical tape to assure the plastic cover remains closed.

a. Rotate and reinstall the fuse block on the truck.

b. Plug the brake pedal connector onto the brake lamp switch.

DIODE INSTALLATION PROCEDURE - L-SERIES CITY DELIVERY

1. Open the fuse panel compartment door to expose the fuse block.

2. Locate the diode assembly (#IN4004 printed on diode) below the relays as shown in Figure 3.

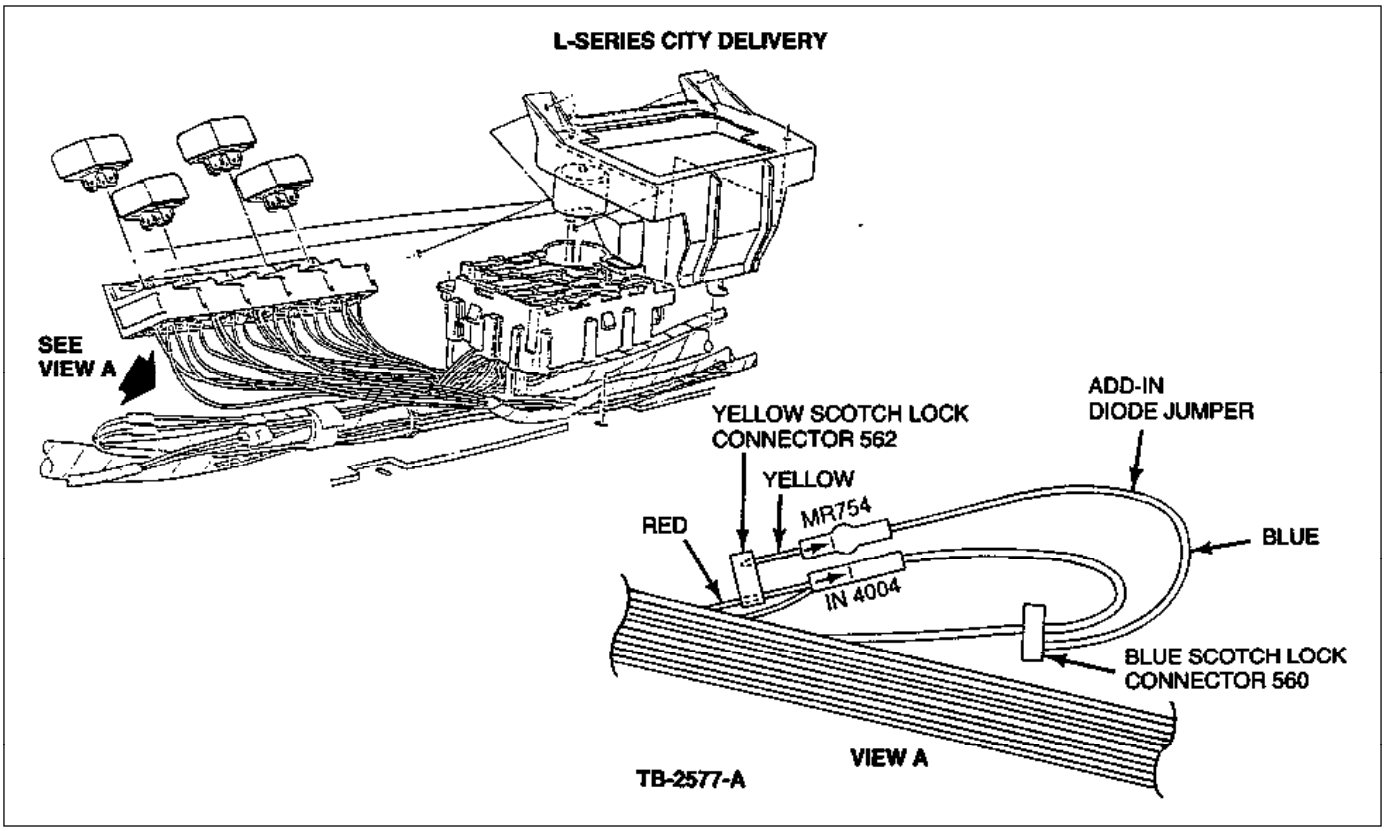


Figure 3 - Article 92-9-17

3. Using a wire cutter, cut and remove the plastic tie wrap holding the diode assembly to the harness.

4. Using a new diode assembly (#MR754 printed on diode), identify and match the direction of the old diode installation by comparing arrows marked on the diode coverings.

5. Install the first connector.

    a. Attach a yellow Scotch Lock connector #562 or equivalent onto the red 12 gauge wire on the double wire end of the old diode assembly.

    b. Insert the yellow end of the covered wire assembly into the yellow Scotch Lock connector #562.

    c. Using Scotch Lock tool #E-9BM or adjustable pliers, squeeze the metal contact flush in the connector and close the plastic cover over the connector.

6. Install the second connector.

    a. Attach a blue Scotch Lock connector #560 or equivalent onto the single red 14 gauge wire.

    b. Insert the blue wire fully into the blue Scotch Lock connector #560.

    c. Using Scotch Lock tool #E-9BM or adjustable pliers, squeeze the metal contact flush in the connector and close the plastic cover over the connector.

7. Install a wrap of 3/4" (19.1mm) wide blue colored tape to the -14401- wiring assembly on the outside of the wire trunk near the built-in diode to signify that this TSB service was performed.

8. Wrap the Scotch Lock connectors with electrical tape to assure the plastic cover remains closed. Tuck the diode assembly below the relays.

DIODE INSTALLATION PROCEDURE - L-SERIES FLEET DELIVERY

1. Unscrew the dash panel to expose the fuse block.

2. Unscrew the fuse block from the instrument panel and tilt the block forward to expose the diode assembly (#IN4004 printed on diode). See Figure 4.

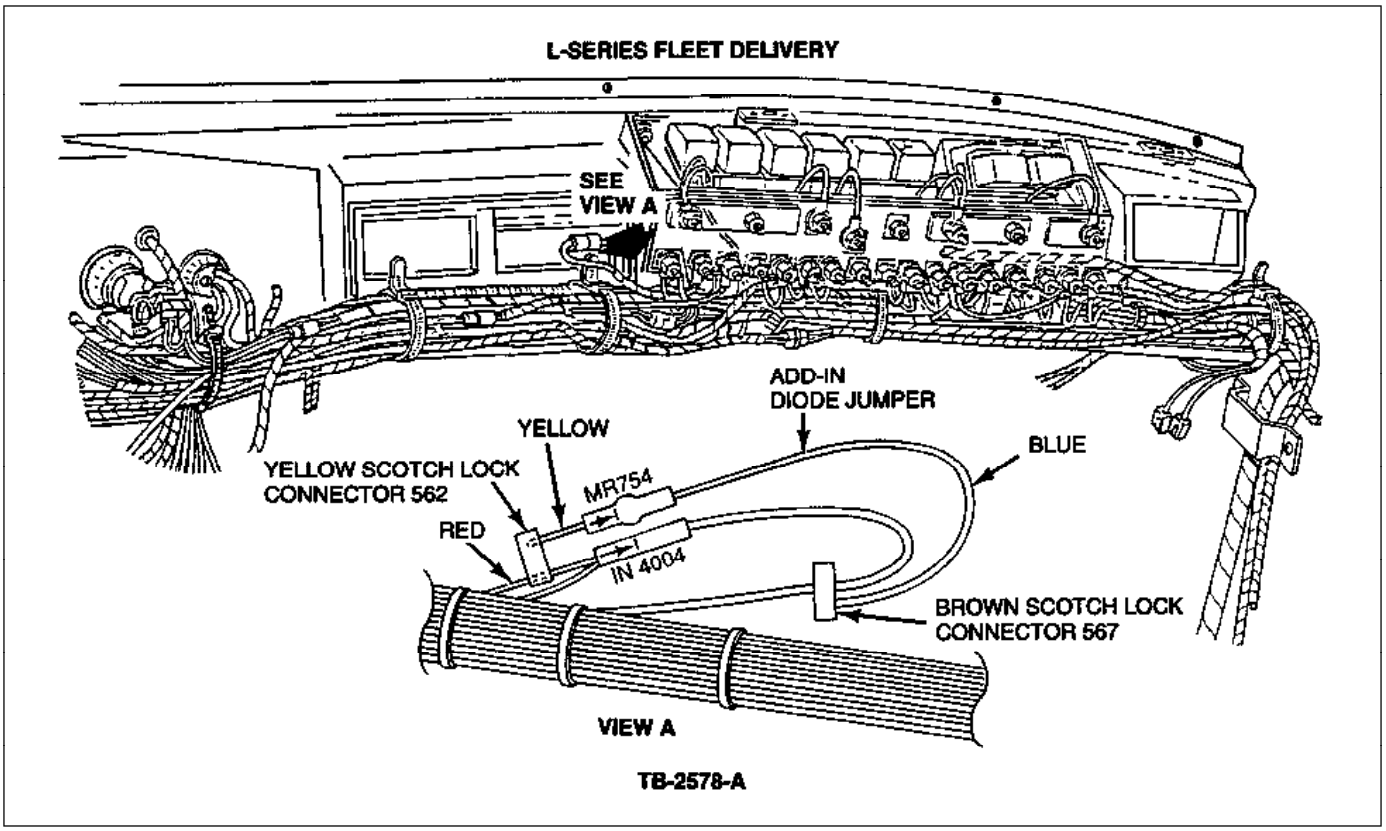


Figure 4 - Article 92-9-17

3. Using a wire cutter, cut and remove the plastic tie wrap holding the diode assembly to the harness.

4. Using a new diode assembly (#MR754 printed on diode), identify and match the direction of the old diode installation by comparing arrows marked on the diode coverings.

5. Install the first connector.

   a. Attach a yellow Scotch Lock connector #562 or equivalent onto the red 12 gauge wire on the double wire end of the new diode assembly.

   b. Insert the yellow end of the covered wire assembly into the yellow Scotch Lock connector #562.

   c. Using Scotch Lock tool #E-9BM or adjustable pliers, squeeze the metal contact flush in the connector and close the plastic cover over the connector.

6. Install the second connector.

   a. Attach a brown Scotch Lock connector #567 or equivalent onto the single red 12 gauge wire.

   b. Insert the blue wire fully into the brown Scotch Lock connector #567.

c. Using Scotch Lock tool #E-9BM or adjustable pliers, squeeze the metal contact flush in the connector and close the plastic cover over the connector.

7. Install a wrap of 3/4" (19.1mm) wide blue colored tape to the -14401- wiring assembly on the outside of the wire trunk near the built-in diode to signify that this TSB service was performed.

8. Wrap the Scotch Lock connectors with electrical tape to assure the plastic cover remains closed. Reinstall the fuse block on the instrument panel and screw the dash cover on the dash board.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 201200, 203200

92-10, ***Publication Date: MAY 6, 1992***

Fuel System - 6.6L And 7.8L - Bosch Fuel Injection Pump Leak - Service Procedure	Article No. 92-10-12

MEDIUM/HEAVY TRUCK:
1986-90 CARGO SERIES, F & B SERIES, L SERIES

ISSUE:
Fuel injection pump leaks may be caused by O-rings leaking at the delivery valve holder. O-ring leaks are one of the most common leak concerns of the Bosch fuel injection pump. Past repair procedures have required that the pump be removed and the repair completed at an authorized Bosch facility.

ACTION:
Repair the Bosch fuel injection pump, with the pump still on the vehicle. Refer to the following procedure for service details.

CAUTION:
TO PREVENT ANY CHANGES OF PUMP CALIBRATION, ONLY THE REMOVAL OF THE DELIVERY VALVE HOLDER AND CHANGING OF THE O-RINGS AND BRONZE GASKET ARE AUTHORIZED REPAIRS TO BE MADE ON THE VEHICLE. ALL OTHER PUMP REPAIRS MUST BE MADE AT AN AUTHORIZED BOSCH REPAIR FACILITY.

REMOVING THE DELIVERY VALVE - HOLDER

1. Loosen the high pressure fuel line from the leaking delivery valve holder. Unscrew and move the fuel line out of way.

   CAUTION:
   MAINTAIN A CLEAN ENVIRONMENT, TO PREVENT FUEL CONTAMINATION, WHEN WORKING AROUND OPEN FUEL INJECTION FITTINGS OR LINES.

2. Loosen the delivery valve holder and unscrew.
   - On "P" pumps, use socket wrench KEP 2986 which is available through Bosch service shops.
   - On "A" pumps, loosen the clamping screws and the delivery valve holder with a 22mm or 7/8inch socket.

3. Remove o-ring from the delivery valve holder, Refer to Figure 1.

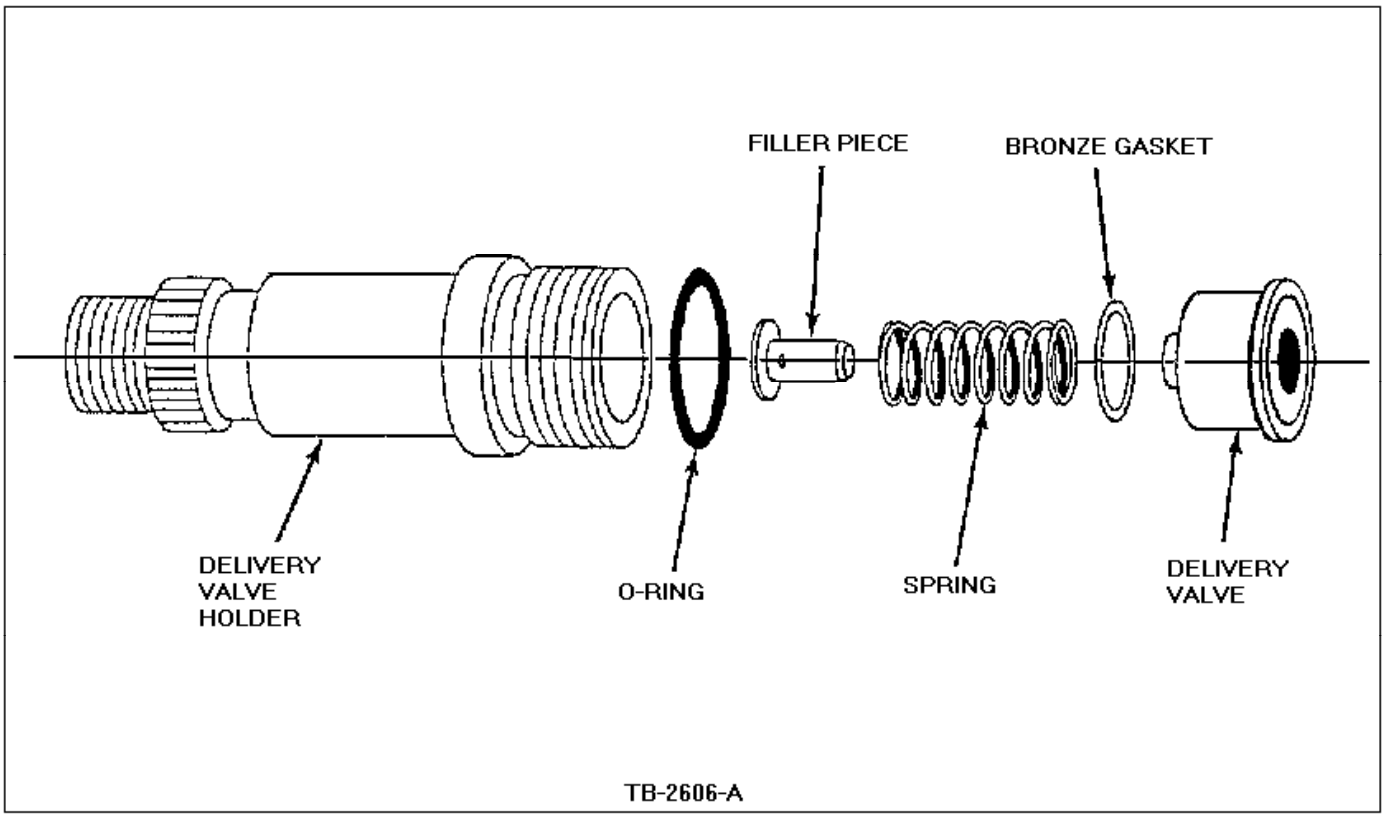


Figure 1 - Article 92-10-12

4. Take off valve spring with filler piece from delivery valve, Refer to Figure 1.

5. Remove the bronze gasket from the top of the delivery valve, Refer to Figure 1.

ASSEMBLING THE DELIVERY - VALVE HOLDER

1. Insert the new bronze gasket and valve spring with filler piece in delivery valve holder.

   NOTE:
   BRONZE GASKET MUST BE INSTALLED ON TOP OF DELIVERY VALVE.

2. Install delivery valve holder with new O-ring and wet male threads with oil.

3. Tighten the delivery valve holder, Refer to Figure 2 for torque sequence.

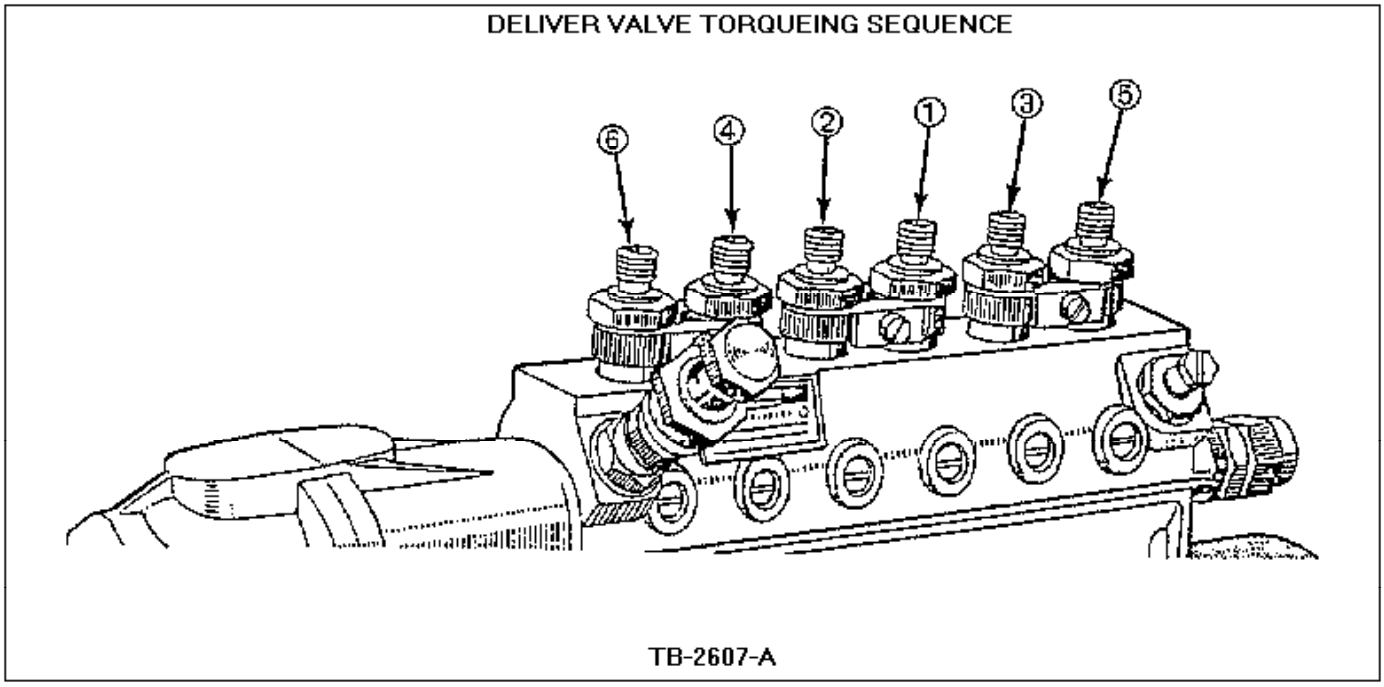


Figure 2 - Article 92-10-12

NOTE:
TIGHTEN FROM THE CENTER OUT, ALTERNATING LEFT TO RIGHT. ANY EXCESSIVE TORQUE ON THE HOLDER OR CLAMP MAY CAUSE THE RACK TO BIND.

- On "P" pumps, tighten the delivery valve holder with socket wrench KDEP 2986 to 110-120N-m (81-89 lb-ft.).
- On "A" pumps, tighten the delivery valve holders to (30-40 lb-ft).
- Tighten clamp screws to 60-77N-m (44-57 in lbs).

CAUTION:
PROPER TORQUING OF THE DELIVERY VALVE HOLDERS IS CRITICAL TO PROPER FUEL RACK OPERATION.

4. Reinstall the high pressure fuel line to the delivery valve holder. Torque to 22-27N-m (16-20 lb ft).
5. Operate the fuel shut off lever on and off to insure that the rack is not binding.
6. Start the vehicle and operate through the speed range to confirm leak repair.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage, Powertrain And California Emissions

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 404000

92-11, ***Publication Date: MAY 20, 1992***

Emission Control - Standardization Of All Part And System Names - California Air Resources Board (SAEJ1930)	**Article No. 92-11-7**

FORD:
1993 CROWN VICTORIA, ESCORT, FESTIVA, MUSTANG, PROBE, TAURUS, TEMPO, THUNDERBIRD

LINCOLN-MERCURY:
1993 CAPRI, CONTINENTAL, COUGAR, GRAND MARQUIS, MARK VIII, SABLE, TOPAZ, TOWN CAR, TRACER

LIGHT TRUCK:
1993 AEROSTAR, BRONCO, ECONOLINE, EXPLORER, F-150-350 SERIES, F-47, F-53, RANGER, VILLAGER

MEDIUM/HEAVY TRUCK:
1993 F & B SERIES, L SERIES

ISSUE:
The California Air Resources Board (CARB) passed a law that standardizes all part and system names and acronyms used to describe electronic emission related systems and components for all manufacturers. This law is effective beginning with 1993 model year vehicles.

ACTION:
The preliminary list of new system/component names and acronyms shown in Figures 1 - 8 will change due to that legislation.

J1930 Terminology List

Note: Certain Ford component names have been changed in this publication to conform to Society of Automotive Engineers (SAE) directive J1930.

SAE J1930 standardizes automotive component names for all vehicle manufacturers.

This chart lists new 1993 SAE J1930 component names and the obsolete 1992 component names.

New Term	New Acronyms/Abbreviations	Old Acronyms/Term
4X4 Low	4X4L	– 4X4L – 4X4 Low
Air Conditioning	A/C	– A/C – Air Conditioning
Air Conditioning Clutch	ACC	– ACC – Air Conditioning Clutch
Air Conditioning Cyclic Switch	ACCS	– ACCS – Air Conditioning Cyclic Switch
Air Conditioning Demand	ACD	– ACD – Air Conditioning Demand
Air Conditioning On	ACON	– ACON – Air Conditioning On
Automatic Ride Control	ARC	– ACL – Acceleration Signal
Barometric Pressure	BARO	– BP – Barometric Pressure
Battery Positive Voltage	B+	– BATT+ – Battery Positive
Blower	BLR	– BLR – Blower
Brake On/Off	BOO	– BOO – Brake On/Off
Bypass Air	BPA	– BPA – Bypass Air
New Term	**New Acronyms/Abbreviations**	**Old Acronyms/Term**
Canister Purge	CANP	– CANP – Canister Purge
Charge Air Cooler	CAC	– Intercooler
Clutch Pedal Position switch	CPP switch	– CES – CIS – Clutch Engage Switch – Clutch Interlock Switch
Coast Clutch Solenoid	CCS	– CCS – Coast Clutch Solenoid
Computer Control Dwell	CCD	– CCD – Computer Control Dwell

Figure 1 - Article 92-11-7

J1930 Terminology List

New Term	New Acronyms/Abbreviations	Old Acronyms/Term
Constant Control Relay Module	CCRM	– IRCM – Integrated Relay Control Module
Crankshaft Position sensor	CKP sensor	– CPS – VRS – Variable Reluctance Sensor
Cylinder Indentification	CID	– CID – Cylinder Indentification
Data Link Connector	DLC	– Self-Test connector
Data Negative	DATA-	– DATA- – Data Negative
Data Output Line	DOL	– DOL – Data Output Line
Data Positive	DATA+	– DATA+ – Data Positive
Daytime Running Lamps	DRL	– DRL – Daytime Running Lamps
Defroster	DEF	– DEF – Defroster
Diagnostic Test Mode	DTM	– Self-Test mode
Diagnostic Trouble Code	DTC	– Self-Test code
Differential Pressure Feedback EGR	DPFE	– DPFE – Differential Pressure Feedback EGR
New Term	**New Acronyms/Abbreviations**	**Old Acronyms/Term**
Distributor Ignition	DI	– CBD – DS – TFI – Closed Bowl Distributor – Duraspark Ignition – Thick Film Ignition
Dual Overhead Cam	DOHC	– DOHC – Dual Overhead Cam
Dual Plug Inhibit	DPI	– DPI – Dual Plug Inhibit
EGR Pressure Transducer	EPT	– EPT – EGR Pressure Transducer
EGR Temperature	EGRT	– EGRT – EGR Temperature
EGR Vacuum Regulator	EVR	– EVR – EGR Vacuum Regulator
EGR Valve Position	EVP	– EVP – EGR Valve Position

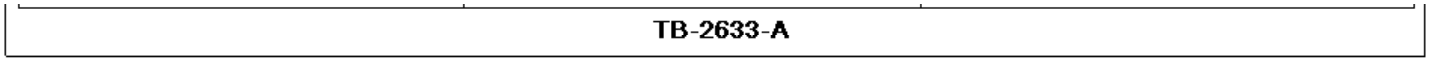


Figure 2 - Article 92-11-7

J1930 Terminology List

New Term	New Acronyms/Abbreviations	Old Acronyms/Term
Electronic Air Pump	EAP	– EAP – Electronic Air Pump
Electronic Engine Control	EEC	– EEC – Electronic Engine Control
Electronic Ignition	EI	– DIS – EDIS – Distributorless Ignition System – Electronic Distributorless Ignition System
Electronic Pressure Control	EPC	– EPC – Electronic Pressure Control
Electronic Secondary Air Injection	EAIR	– EAM – Electronic Air Management
Engine Coolant Temperature	ECT	– ECT – Engine Coolant Temperature
Engine RPM sensor	RPM sensor	– RPMS – Engine RPM sensor
Exhaust Gas Recirculation	EGR	– EGR – Exhaust Gas Recirculation
Fan Control	FC	– EDF – Electro-Drive Fan
Flexible Fuel sensor	FF sensor	– FCS – FFS – FFV – Fuel Compensation Sensor – Flex Fuel Sensor
New Term	**New Acronyms/Abbreviations**	**Old Acronyms/Term**
Flexible Fuel vehicle	FF vehicle	– FFV – Flexible Fuel Vehicle
Fuel Pressure Regulator Control	FPRC	– FPRC – Fuel Pressure Regulator Control
Fuel Pump	FP	– FP – Fuel Pump
Fuel Pump Monitor	FPM	– FPM – Fuel Pump Monitor
Governor Control Module	GCM	– GEM – Governor Electronic Module
Ground	GND	– GND – Ground
Headlamp	HDL	– HDL – Headlamp

Figure 3 - Article 92-11-7

J1930 Terminology List

New Term	New Acronyms/Abbreviations	Old Acronyms/Term
Heated Oxygen Sensor	HO2S	– HEGO – Heated Exhaust Gas Oxygen Sensor
High Fan Control	HFC	– HEDF – High Speed Electro-Drive Fan
High Fuel Pump	HFP	– HFP – High Fuel Pump
High Output	HO	– HO – High Output
High Swirl Combustion	HSC	– HSC – High Swirl Combustion
Idle Air Control	IAC	– ISC – Idle Speed Control
Idle Air Control Bypass Air	IAC BPA	– ISC-BPA – Idle Speed Control - Bypass Air
Ignition Control Module	ICM	– DIS module – EDIS module – TFI module
Ignition Diagnostic Monitor	IDM	– IDM – Ignition Diagnostic Monitor
Inertia Fuel Shutoff switch	IFS switch	– Inertia Switch
Intake Air Temperature	IAT	– ACT – Air Charge Temperature
Intake Manifold Runner Control	IMRC	– IAC – Inlet Air Control
New Term	**New Acronyms/Abbreviations**	**Old Acronyms/Term**
Keep Alive Memory	KAM	– KAM – Keep Alive Memory
Keep Alive Power	KAPWR	– KAPWR – Keep Alive Power
Knock Sensor	KS	– KS – Knock Sensor
Low Fan Control	LFC	– EDF – Electro-Drive Fan
Low Fuel Pump	LFP	– LFP – Low Fuel Pump
Malfunction Indicator Lamp	MIL	– CEL – "CHECK ENGINE" Light – "SERVICE ENGINE SOON" Light

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Figure 4 - Article 92-11-7

J1930 Terminology List

New Term	New Acronyms/Abbreviations	Old Acronyms/Term
Manifold Absolute Pressure	MAP	– MAP – Manifold Absolute Pressure
Manifold Absolute Pressure Per Altitude	MAPPA	– GMAPPA – Governor Manifold Absolute Pressure Per Altitude
Manual Lever Position	MLP	– MLP – Manual Lever Position
Mass Air Flow	MAF	– MAF – Mass Air Flow
Mass Air Flow Return	MAF RTN	– MAF RTN – Mass Air Flow Return
Multiport Fuel Injection	MFI	– EFI – Electronic Fuel Injection
Octane Adjust	OCT ADJ	– OCT ADJ – Octane Adjust
Overhead Cam	OHC	– OHC – Overhead Cam
Oxidation Catalytic Converter	OC	– COC – Conventional Oxidation Catalyst
Positive Crankcase Ventilation	PCV	– PCV – Positive Crankcase Ventilation
Power Ground	PWR GND	– PWR GND – Power Ground
New Term	**New Acronyms/Abbreviations**	**Old Acronyms/Term**
Power Steering Pressure switch	PSP switch	– PSPS – Power Steering Pressure switch
Powertrain Control Module	PCM	– ECA – ECM – ECU – EEC processor – Engine Control Assembly – Engine Control Module – Engine Control Unit
Pressure Feedback EGR	PFE	– EPT – Exhaust Pressure Transducer
Profile Ignition Pickup	PIP	– PIP – Profile Ignition Pickup
Programmable Speedometer/ Odometer Module	PSOM	– PSOM – Programmable Speedometer/ Odometer Module

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Figure 5 - Article 92-11-7

J1930 Terminology List

New Term	New Acronyms/Abbreviations	Old Acronyms/Term
Pulsed Secondary Air Injection	PAIR	– MPA – PA – Thermactor II – Managed Pulse Air – Pulse Air
Reduction Oxidation Catalytic Converter	REDOX	– REDOX – Reduction Oxidation Catalytic Converter
Scan Tool	ST	– GST – NGS – Generic Scan Tool – New Generation STAR Tester
Secondary Air Injection	AIR	– AM – CT – MTA – Air Management – Conventional Thermactor – Managed Thermactor Air – Thermactor
Secondary Air Injection Bypass	AIRB	– AM1 – TAB – Air Management 1 – Thermactor Air Bypass
Secondary Air Injection Diverter	AIRD	– AM2 – TAD – Air Management 2 – Thermactor Air Diverter
Self-Test Input	STI	– STI – Self-Test Input
Self-Test Output	STO	– STO – Self-Test Output
Sequential Multiport Fuel Injection	SFI	– SEFI – Sequential Electronic Fuel Injection
Shift Indicator Lamp	SIL	– SIL – Shift Indicator Lamp
Shift Solenoid	SS	– SS – Shift Solenoid
Signal Return	SIG RTN	– SIG RTN – Signal Return
Solid State Relay	SSR	– SSR – Solid State Relay
Spark Output	SPOUT	– SAW

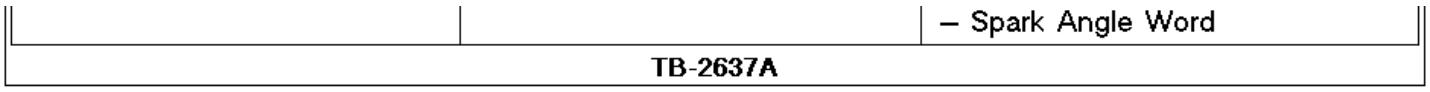

Figure 6 - Article 92-11-7

J1930 Terminology List

New Term	New Acronyms/Abbreviations	Old Acronyms/Term
Speed Density	SD	– SD – Speed Density
Super High Output	SHO	– SHO – Super High Output
Supercharger/Supercharged	SC	– SC – Supercharger/Supercharged
Tachometer	TACH	– TACH – Tachometer
Three Way Catalytic Converter	TWC	– TWC – Three Way Catalytic Converter
Three Way + Oxidation Catalytic Converter	TWC+OC	– TWC & COC – Three Way Catalyst and Conventional Oxidation Catalyst
Throttle Body	TB	– TB – Throttle Body
Throttle Body Injection	TBI	– CFI – Central Fuel Injection
Throttle Position	TP	– TP – Throttle Position
Throttle Position Output	TPOUT	– TPOUT – Throttle Position Output
New Term	**New Acronyms/Abbreviations**	**Old Acronyms/Term**
Torque Converter Clutch	TCC	– CCC – CCO – MCCC – Converter Clutch Control – Converter Clutch Override – Modulated Converter Clutch Control
Torque Converter Clutch solenoid	TCC solenoid	– LUS – MLUS – Lock Up Solenoid – Modulated Lock Up Solenoid
Transmission Control Module	TCM	– 4EAT Module
Transmission Control Switch	TCS	– TCS – Transmission Control Switch
Transmission Control Indicator Lamp	TCIL	– OCIL – Transmission Control Indicator Lamp
Transmission Oil Temperature	TOT	– TOT – Transmission Oil Temperature

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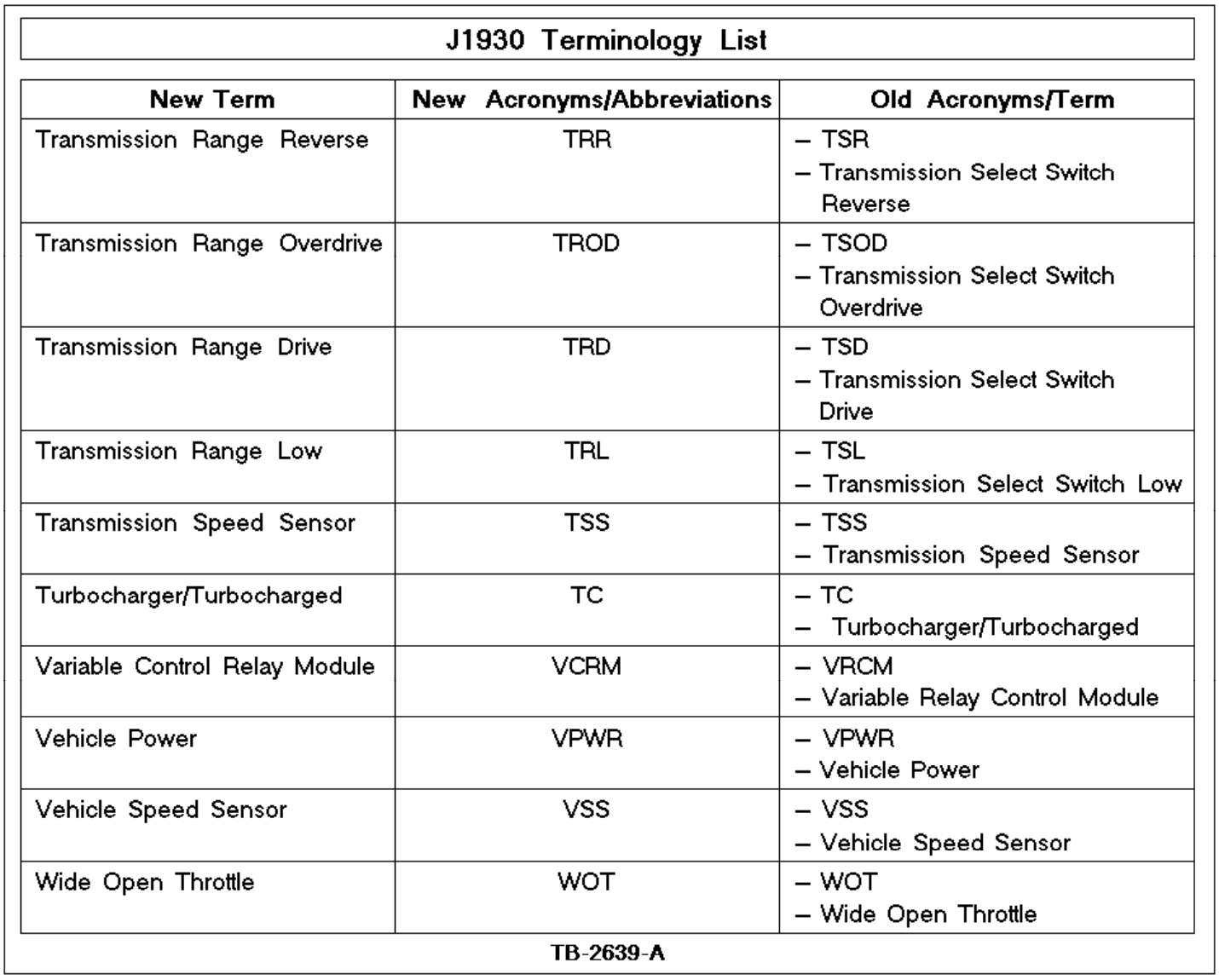
Figure 7 - Article 92-11-7



J1930 Terminology List

New Term	New Acronyms/Abbreviations	Old Acronyms/Term
Transmission Range Reverse	TRR	– TSR – Transmission Select Switch Reverse
Transmission Range Overdrive	TROD	– TSOD – Transmission Select Switch Overdrive
Transmission Range Drive	TRD	– TSD – Transmission Select Switch Drive
Transmission Range Low	TRL	– TSL – Transmission Select Switch Low
Transmission Speed Sensor	TSS	– TSS – Transmission Speed Sensor
Turbocharger/Turbocharged	TC	– TC – Turbocharger/Turbocharged
Variable Control Relay Module	VCRM	– VRCM – Variable Relay Control Module
Vehicle Power	VPWR	– VPWR – Vehicle Power
Vehicle Speed Sensor	VSS	– VSS – Vehicle Speed Sensor
Wide Open Throttle	WOT	– WOT – Wide Open Throttle

TB-2639-A

Figure 8 - Article 92-11-7

Any questions regarding this article should submitted to:

Ford Service Publications

Attn. PINS Coordinator, Room 2004

3000 Schafer Rd.

Dearborn. MI 48126

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 623000, 690000

92-11, ***Publication Date: MAY 20, 1992***

• Brakes - Front Air 15" X 4" - "Squealing" Noise During Light Application • Brakes - Front Air 15" X 4" - Availability Of New Shoe And Lining Kit With Linings Pre-Assembled To Shoes • Noise - "Squeal" From Front Air Brakes During Light Application - Bendix 15" X 4"	Article No. 92-11-15

MEDIUM/HEAVY TRUCK:
1986-90 CARGO SERIES
1988-91 F & B SERIES, L SERIES

ISSUE:
A "squealing" noise from the front brakes may occur on vehicles that experience continuous light-duty brake usage. This occurs because the drum, shoe, lining assembly and brake springs all resonate at the same frequency under constant low energy braking. This noise does not affect braking performance.

ACTION:
If a "squeal" occurs with every brake application, install a new brake lining service kit (F1HZ-2001-A) which has the linings pre-assembled to the shoes and spring kit (E8HZ-2035-A). Refer to the instructions provided in the kit for service details.

Refer to the appropriate Ford Heavy Truck Shop Manual, Section 12-48, for the proper brake adjustment procedure.

In the pre-burnished (initial installation) state, it is possible to have shoe-to-drum contact which will not change the frequency enough to resolve the noise concern. Therefore, the new linings may require a burnish-in period to obtain adequate shoe-to-drum contact before the noise subsides. The length of this period is dependent on vehicle use. Performing the following recommended actions should reduce or eliminate the burnish-in period.

In conjunction with installing the new brake lining service kit, use the following procedure to ensure adequate brake perrformance.

1. Inspect the brake for the following items.

   - Uneven wear on the brake shoes
   - Hard spots in the drum surfaces
   - Out-of-round drums

   Replace drums with evidence of hard spots.

   NOTE:
   DO NOT MISTAKE THE BLACK RING IN THE CENTER OF THE DRUM FOR HARD SPOTS. THIS IS BRAKE DUST AND CAN BE REMOVED BY SANDING.

2. If no hard spots are visible, turn the drums with the wheel nuts inverted against the drum, or if possible, turn the hub, drum and tire assembly as a unit.

This will keep drum distortion to a minimum. The surface finish for the drum should be a medium smooth cut. Refer to the appropriate Medium Truck Shop Manual, Section 12-10, for service details.

3. Check the drums for out-of-roundness before removing from the lathe.

4. Arc shoes to match drums, thus fitting the shoes to the drum before assembly.

5. Replace all brake springs (E8HZ-2035-A) at the time the relining is performed.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 91-10-16

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 301000, 702000, 702100

92-11, ***Publication Date: MAY 20, 1992***

Brakes - Hydraulic - Availability Of Improved Rear Expander, Adjuster Cylinder Seals And New Heavy Duty Return Springs For Service Use	**Article No. 92-11-16**

MEDIUM/HEAVY TRUCK:
1984-92 F & B SERIES, L SERIES

ISSUE:
An improved rear expander, adjuster cylinder seals and new heavy duty return springs are now available for service.

ACTION:
If service is required, use the improved designed parts for repair. Design improvements have been made to the rear hydraulic drum brake system to...

- Improve expander and adjuster cylinder seals for seal effectiveness and durability
- Incorporate new heavy duty return springs to allow adjustment of the top shoe during forward motion stops.

The seal in the adjuster and expander cylinders has been redesigned and a material change has been made to improve seal effectiveness and durability. The seal has a new high compression design and the material change in the seal increases the operating temperature range and material set properties.

In addition, the heavy duty return spring has been redesigned to adjust the top and bottom shoe during forward stops. Previous design springs required reverse stops to adjust the top shoe. There are two (2) new heavy duty return springs (orange - LH, white - RH) which replace one (1) heavy duty return spring (red - LH and RH).

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 301000, 390000

Bulletin Contents

TSB Article 92-11-17 has been superseded by Article 92-25-17.

Bulletin Contents

TSB Article 92-12-22 has been superseded by Article 95-12-11.

• Suspension - Rear - Availability Of New Hendrickson Service Kits For Vehicles With HA-360 Or HA-400 Air Ride Suspensions And Rockwell RT Axles • Suspension - Rear - Poor Vehicle Ride Quality And Driveline Vibration - Vehicles With Hendrickson HA-360 Or HA-400 Air Ride Suspensions And Rockwell RT Axles • Vibration - Driveline - Availability Of New Hendrickson Service Kits For Vehicles With HA-360 Or HA-400 Air Ride Suspensions And Rockwell RT Axles • Axle - Rear - Cracked, Damaged, Leaking Lube At Suspension Mount - Diagnostic And Repair Procedure - Availability Of New Hendrickson Service Kits For Vehicles With HA-360 Or Ha-400 Air Ride Suspensions And Rockwell RT Axles	Article No. 92-13-18

MEDIUM/HEAVY TRUCK:
1989-92 L SERIES

ISSUE:
Poor vehicle ride quality, driveline vibration and axle U-bolt hardware losing torque have resulted in several design improvements. Two new rear suspension service kits incorporating these improvements, one for 52" axle spread and one for 60"axle spread, are now available for service use.

ACTION:
If service is required, refer to the General Diagnostic Procedure Flow Chart, Figure 1. Use the following diagnostic and correction procedure to identify and correct the confirmed concerns.

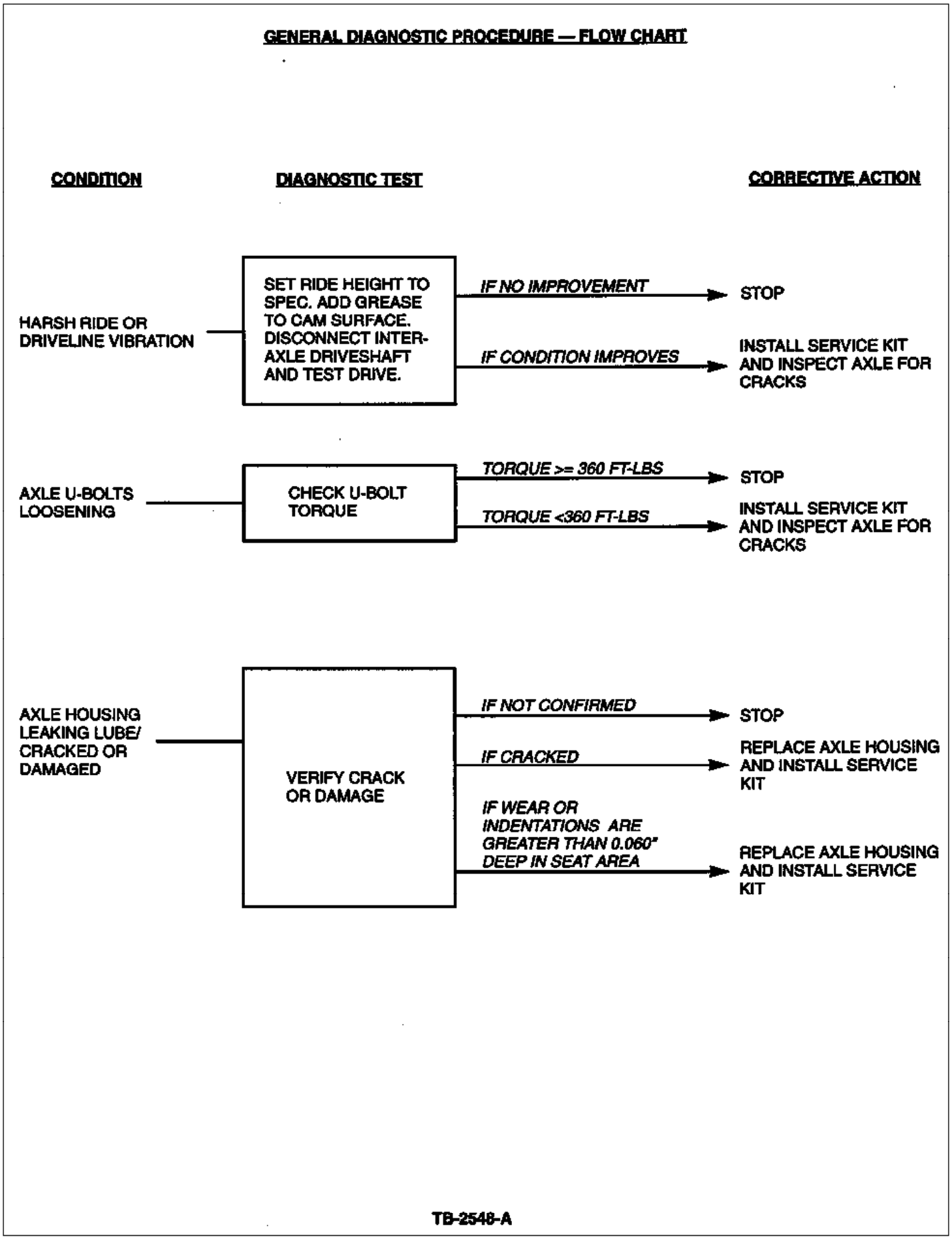

GENERAL DIAGNOSTIC PROCEDURE — FLOW CHART
CONDITION
DIAGNOSTIC TEST
CORRECTIVE ACTION
HARSH RIDE OR DRIVELINE VIBRATION
SET RIDE HEIGHT TO SPEC. ADD GREASE TO CAM SURFACE. DISCONNECT INTER-AXLE DRIVESHAFT AND TEST DRIVE.
IF NO IMPROVEMENT
STOP
IF CONDITION IMPROVES
INSTALL SERVICE KIT AND INSPECT AXLE FOR CRACKS
AXLE U-BOLTS LOOSENING
CHECK U-BOLT TORQUE
TORQUE >= 360 FT-LBS
STOP
TORQUE <360 FT-LBS
INSTALL SERVICE KIT AND INSPECT AXLE FOR CRACKS
AXLE HOUSING LEAKING LUBE/ CRACKED OR DAMAGED
VERIFY CRACK OR DAMAGE
IF NOT CONFIRMED
STOP
IF CRACKED
REPLACE AXLE HOUSING AND INSTALL SERVICE KIT
IF WEAR OR INDENTATIONS ARE GREATER THAN 0.060" DEEP IN SEAT AREA
REPLACE AXLE HOUSING AND INSTALL SERVICE KIT
TB-2548-A

Figure 1 - Article 92-13-18

SERVICE KIT DESCRIPTION

The components included in the Hendrickson rear suspension service kits (F2HZ-5L793-A for 52" axle spread and F2HZ-5L793-B for 60" axle spread) are identified in detail in Figure 2.

HA 360/400 FPSD SERVICE KIT COMPONENTS — 52" AND 60" AXLE SPREAD, ROCKWELL RT AXLES				
	HENDRICKSON KIT #56612-061 52" AXLE SPREAD		HENDRICKSON KIT #56612-062 60" AXLE SPREAD	
PART DESCRIPTION	QUANTITY	HENDRICKSON P/N	QUANTITY	HENDRICKSON P/N
SLIPPER PAD KIT	4	56557-001	4	56557-001
TOP PAD	4	49337	4	49337
DELRIN LINER (PIA w/BEAM)	4	47905	4	47905
SPRING SEAT - FRONT	2	56501-012	2	56501-012
SPRING SEAT - REAR	2	56757-002	2	56757-001
BOTTOM CAP - FRONT	2	49064	2	49064
BOTTOM CAP - REAR	2	49139	2	49139
SPHERICAL WASHER	16	48574	16	48574
FLAT WASHER 7/8	16	22962-002	16	22962-002
NUT 7/8 - 14 HEX	16	50765-000	16	50765-000
U-BOLT 7/8 - 14 x 16.25" Lg	2	47417-001	2	47417-001
U-BOLT 7/8 - 14 x 15.00" Lg			2	47417-007
U-BOLT 7/8 - 14 x 14.00" Lg	6	47417-006	4	47417-006
TIE BRACKET KIT	1	56570-2	1	56570-2
RIDE HEIGHT GAUGE	1	45745-050	1	45745-050

TB-2549-A

Figure 2 - Article 92-13-18

NOTE:
BECAUSE THE FOLLOWING DESCRIBED CONDITIONS ARE CLOSELY RELATED, ALL COMPONENTS IN THE KIT MUST BE INSTALLED AS DIRECTED.

Even if the parts on the vehicle appear okay, all of the parts in the kit must be installed. The only parts used for service which are not released for production are contained in the Tie Bracket portion of the kit. The tie brackets connect the lower ends of the left and right shock absorber mounts to assure that proper Main Support Member (MSM) spacing is maintained during kit installation. These are not to be removed after the kit has been installed.

HARSH RIDE, DRIVELINE VIBRATION

Harsh ride may be due to excessive suspension friction or to incorrect driveline angles.

1. Confirm that the ride height is correct as shown in Figure 3. The adjustment procedure is detailed in the 1992 L-Series Service Manual, Pages 04-02E-9 and 10.

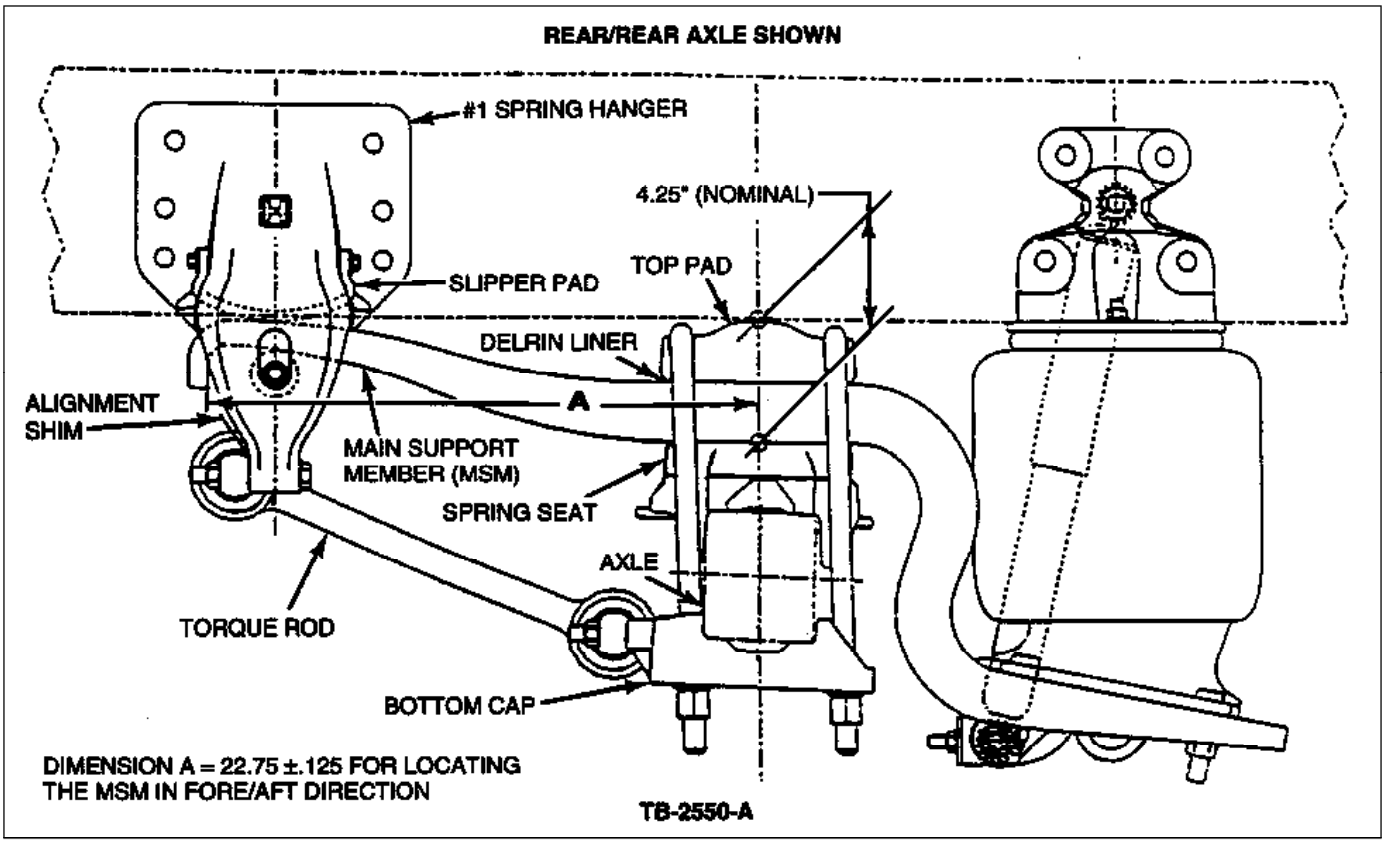


Figure 3 - Article 92-13-18

2. Determine if the vehicle's ride can be improved by adding the slipper or revising driveline angles.

    a. Apply some chassis grease between the bracket cam surface and the Main Support Member (MSM), Figure 3.

    b. Remove the inter-axle driveshaft.

3. If a test drive indicates an improved ride, install the entire service kit per the modification instructions which follow.

    a. Tighten the U-bolts to the new service torque of 400 to 450 lb-ft (542-610 N-m).

    b. When the axles are unbolted from the suspension, inspect the axle housing for cracks with the dye penetrant procedure in Step 8 of the following modification instructions.

SUSPENSION "U-BOLT" TORQUE RETENTION

Vehicles in severe service applications may experience loosening of the axle attachment U-bolts.

1. Measure the U-bolt torque.

2. If any U-bolt torque is below 360 lb-ft (488 N-m), install the entire service kit per the Modification Instructions beginning on Page 41 of this article.

    a. If the torque is above 360 lb-ft (488 N-m) but below 400 to 450 lb-ft (542-610 N-m), tighten the U-bolts to the new service torque of 400 to 450 lb-ft (542-610 N-m).

    b. When the axles are unbolted from the suspension, inspect the axle housing for cracks with the

dye penetrant procedure in Step 8 of the Modification Instructions on page 42 of this article.

AXLE HOUSING LEAKING LUBE OR CRACKED OR DAMAGED

Severe duty applications occasionally experience cracked axle housings.

1. If the axle is still bolted to the suspension, visually verify the leak or observable crack.

2. If the axle is unbolted from the suspension, conduct the dye penetrant procedure in Step 8 of the Modification Instructions on Page 42 of this article.

3. If the housing is determined to be cracked, the housing must be replaced as described in the L-Series Service Manual and the entire service kit must be installed per the Modification Instructions which begin on Page 41.

4. Tighten the U-bolts to the new service torque of 400 to 450 lb-ft (542-610 N-m).

CAUTION:
DO NOT ATTEMPT TO REPAIR A CRACKED AXLE HOUSING BY WELDING.

MODIFICATION INSTRUCTIONS

NOTE:
BEFORE PROCEEDING, IT IS IMPORTANT THAT MAINTENANCE PERSONNEL FIRST READ AND UNDERSTAND THE SAFETY WARNINGS AND FOLLOW THE ASSEMBLY INSTRUCTIONS AND TIGHTENING TORQUE SPECIFICATIONS CONTAINED IN THE 1992 L-SERIES SERVICE MANUAL, SECTION 04-02E, EXCEPT FOR THE U-BOLT TORQUE.

The service torque for the HA suspension U-bolts will be revised in the 1993 L-Series Service Manual to 400 to 450 lb-ft (542-610 N-m).

NOTE:
LEFT AND RIGHT SIDE MODIFICATIONS FOR EACH AXLE ARE TO BE COMPLETED AT THE SAME TIME.

1. The vehicle must be empty of all load. (Work on an empty vehicle.)

2. Chock the wheels of all the axles.

3. Support the frame with frame stands.

4. Support the axles with jack stands.

5. Release all air from the air springs.

6. Install the #1 spring hanger slipper pads.

   a. Remove the rebound bolt locknuts, washers, bolts, spacers and rollers. The torque rods can remain in place, Figure 4.

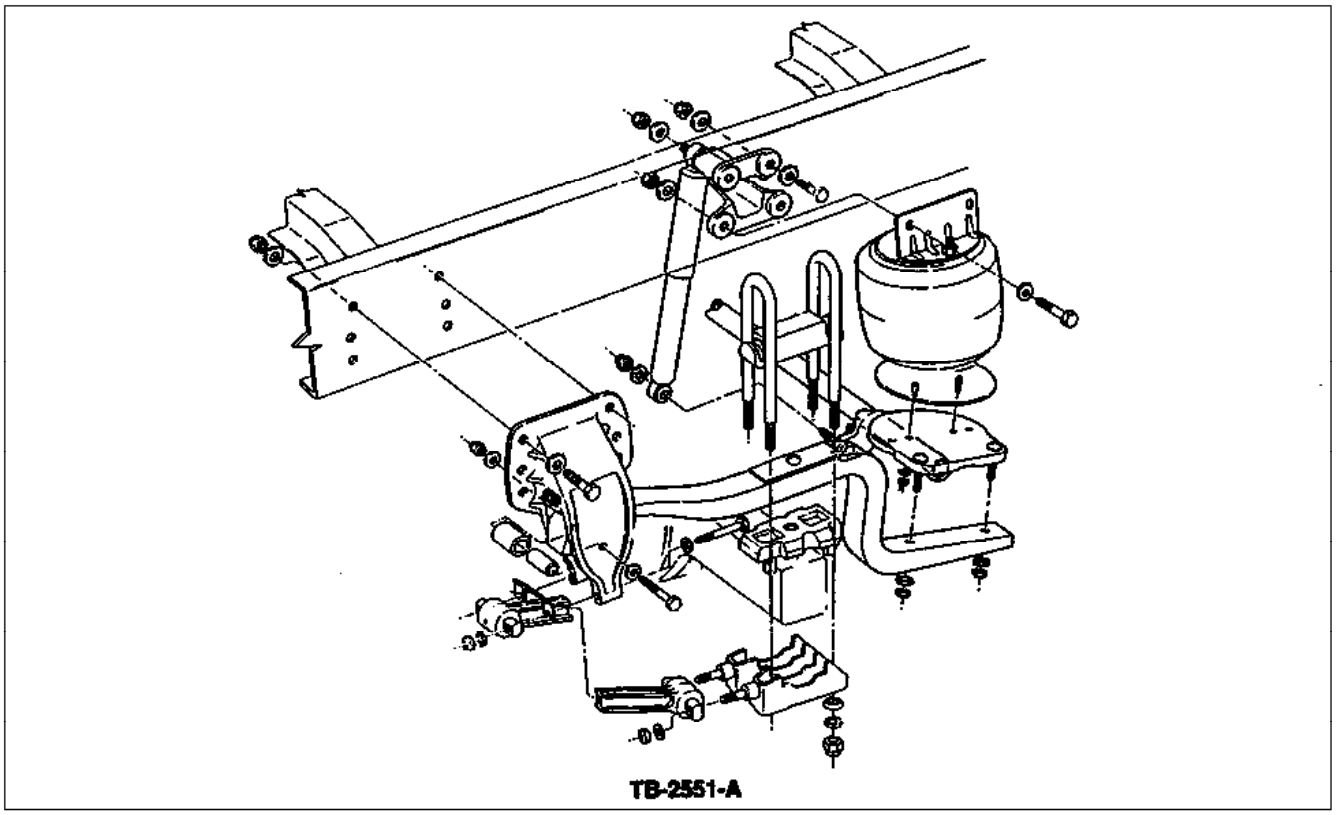


Figure 4 - Article 92-13-18

b. Apply an upward force on the cross tube or lower air spring brackets, with a jack or pry bar. This will cause the tips of the main support members to drop away from the cam surface of the #1 spring hangers.

c. Inspect the hanger bracket cam surfaces and the corresponding top sides of the MSM.

- The frame hanger should not be replaced unless a leg has been grooved by the MSM in excess of 1/8" (3.2mm) or if the cam is cracked or worn through.
- The MSM should not be replaced unless it has been worn so that the MSM is 5/16" (7.9mm) thick or less at the frame hanger cam contact area.
- If any MSM is replaced from current Ford service stock, discard the PIA stiffener plate.

d. Assemble the slipper pads per Figure 5. This requires drilling 11/32" (17.5mm) holes in the frame brackets using the slipper as a template.

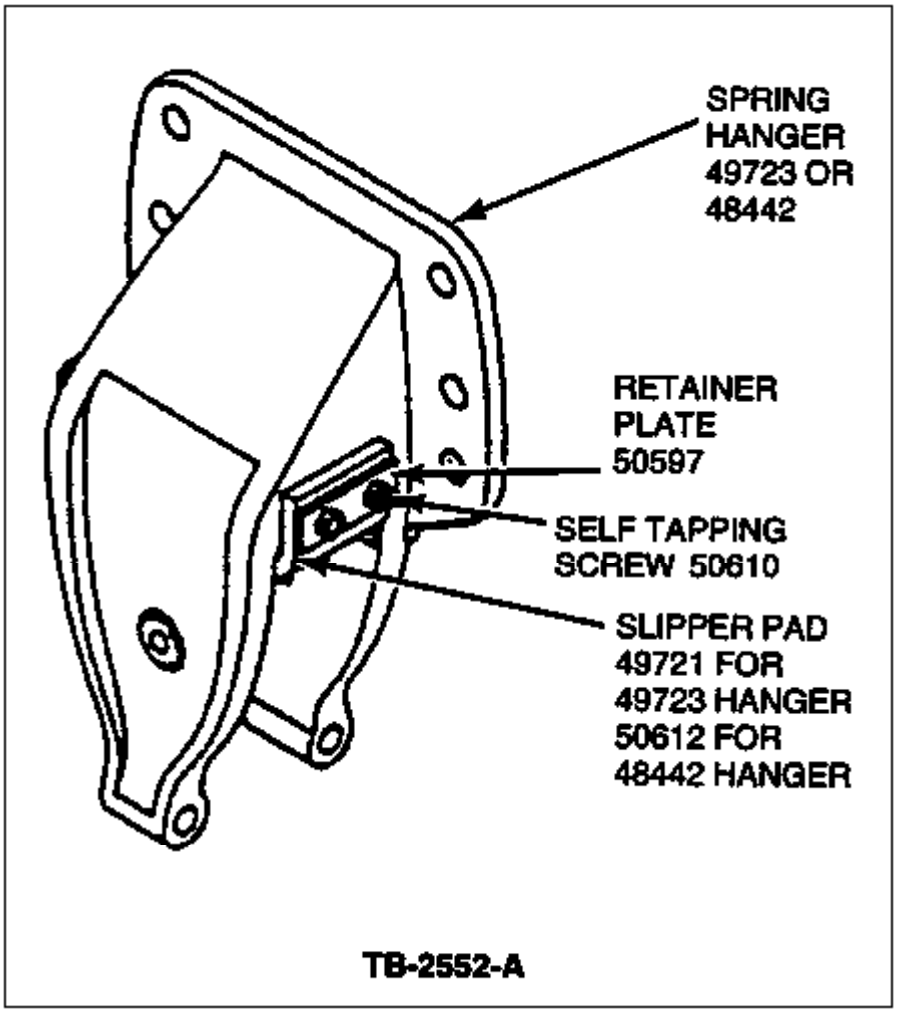


Figure 5 - Article 92-13-18

e. Lubricate the threads of the self tapping screws before assembly to obtain the correct torque. Torque the screws to 17 to 24 lb-ft (23-33 N-m)

CAUTION:
REMOVE DRILL SHAVINGS FROM THE MSM PRIOR TO RELEASING THE JACK OR PRY BAR (NEXT STEP) TO AVOID IMBEDDING SHAVINGS IN THE SLIPPER PAD MATERIAL.

f. Release the jack or pry bar on the cross tube or lower air spring brackets, allowing the main support members to come up to the new slipper pads.

g. Assemble the rebound bolt rollers, spacers, bolts, washers and locknuts. Tighten the locknuts to specifications.

h. Repeat the sequence for the other axle.

7. Remove the axle clamp hardware, Figure 6.

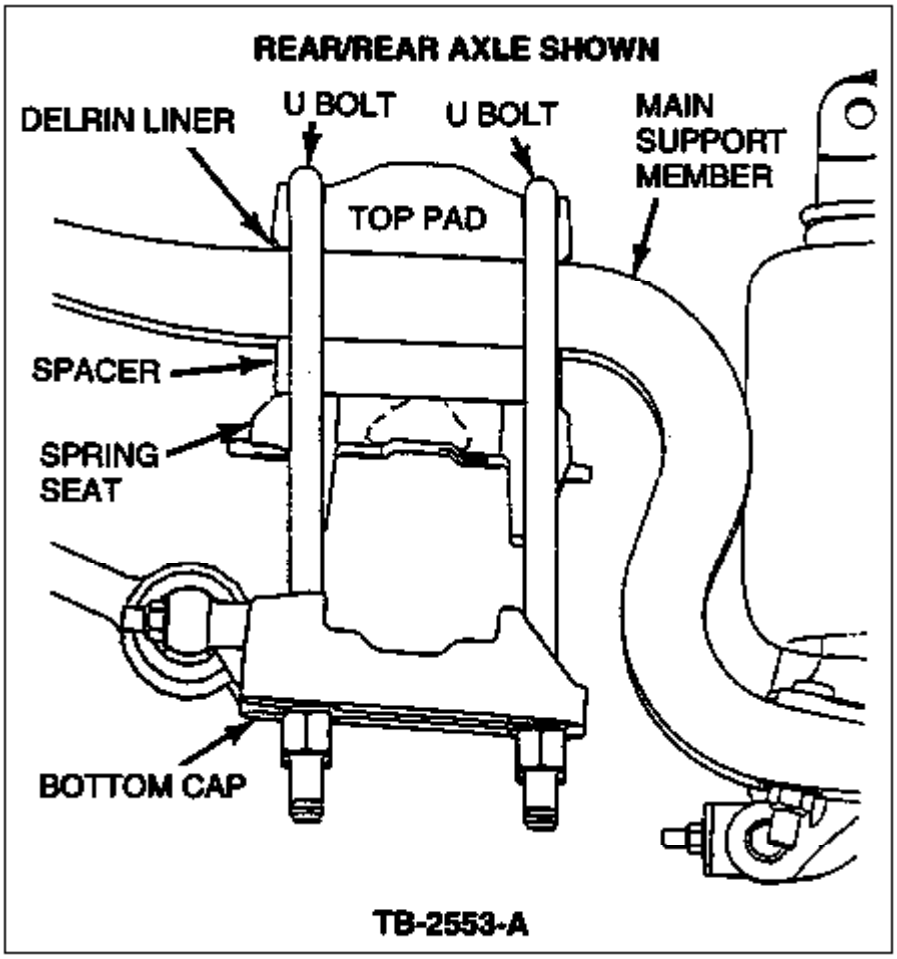


Figure 6 - Article 92-13-18

WARNING:
EXERCISE EXTREME CARE WHEN HANDLING THE MAIN SUPPORT MEMBERS. DO NOT CONNECT ARC WELDING GROUND LINE TO THE MAIN SUPPORT MEMBERS. DO NOT STRIKE AN ARC WITH THE ELECTRODE ON THE MAIN SUPPORT MEMBERS. DO NOT NICK, GOUGE OR SIMILARLY ABUSE THE MAIN SUPPORT MEMBERS. A MAIN SUPPORT MEMBER THAT HAS BEEN SUBJECTED TO ANY OF THESE CONDITIONS MAY FRACTURE, CAUSING LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

a. Remove the torque rod locknuts on the axle bottom cap.

b. Remove and discard the U-bolt locknuts, washers, U-bolts, bottom cap, spring seat, Delrin liner, stiffener plate and top pad.

8. The following procedure is to be completed after removal of the axle and suspension hardware from the vehicle and prior to the installation of the new suspension components into the vehicle.

a. Thoroughly clean the axle housings in the areas where the suspension seats and caps contact the housings.

b. Inspect the axle housings in the areas where the suspension seats and caps contact the housings for evidence of wear, indentations, and other indications that the caps or seats were loose on the housings. Any evidence of wear or indentations greater than 0.060" (1.5mm) deep requires replacement of that axle housing.

NOTE:

AXLE HOUSINGS MAY BE ORDERED THROUGH FPSD AND ARE DIRECT SHIPPED FROM ROCKWELL. IF THERE IS ANY QUESTION AS TO WHETHER A HOUSING NEEDS TO BE REPLACED, CONTACT YOUR LOCAL ROCKWELL REPRESENTATIVE OR CALL 1-800-535-5560 (U.S.) OR 1-800-268-7434 (CANADA).

c. Inspect the axle housings, in the areas where the suspension seats and caps contact the housing, for evidence of cracks using the dye-penetrant method. Follow the instructions supplied with the dye-penetrant material. Any evidence of cracks in an axle housing in the parent (non-welded) material of the housing requires replacement of the axle housing.

CAUTION:
DO NOT ATTEMPT TO REPAIR ANY CRACK IN THE HOUSING WALL BY WELDING OR OTHER MECHANICAL METHODS.

d. Prepare the top of the axle housing in the area of the spring seat. Remove any weld deposits, nicks and burrs. Clean the housing of dirt and grease. Check that the housing surfaces are flat and square in the areas of suspension contact.

e. If the axle was originally equipped with dowels in the top of the housing, they may have been damaged or squared off. It is not necessary to replace either the dowels or the housings if the pins are damaged. The pins may be filed or ground, as required, to aid in the assembly of the new suspension hardware.

9. Position the new seat on the axle housing. The center to center distance between the left and right seats is always 40.00" (1016mm).

CAUTION:
DO NOT WELD THE SEATS TO THE AXLE HOUSING.

It is possible that the main support member center bolt stud is damaged or sheared off. Do not attempt to repair or replace the stud. As long as there is no other obvious damage, the main support member can be reused as is, centering it on the spring seat. In addition to using "witness" marks, the main support member can be located in a fore/aft direction by using dimension "A" shown in Figure 3.

a. Position the main support member on the seat.

b. Position the new Delrin liner on top of the main support member.

c. Position the new thicker top pad on the new Delrin liner.

NOTE:
OLDER MAIN SUPPORT MEMBERS MAY NOT HAVE THE DIMPLE IN THE TOP SURFACE FOR THE NEW TOP PAD PILOT BUTTON. IF THIS IS THE CASE, THE PILOT BUTTON ON THE NEW TOP PAD MUST BE REMOVED USING A STANDARD SHOP BENCH GRINDER.

d. Assemble the new U-bolts, axle bottom caps, spherical washers, flat washers and locknuts, but do not tighten at this time.

10. Install the tie bracket assemblies, Figure 7. By adding this kit before the U-bolts are tightened, the correct main support member spacing of 40.00" will be established.

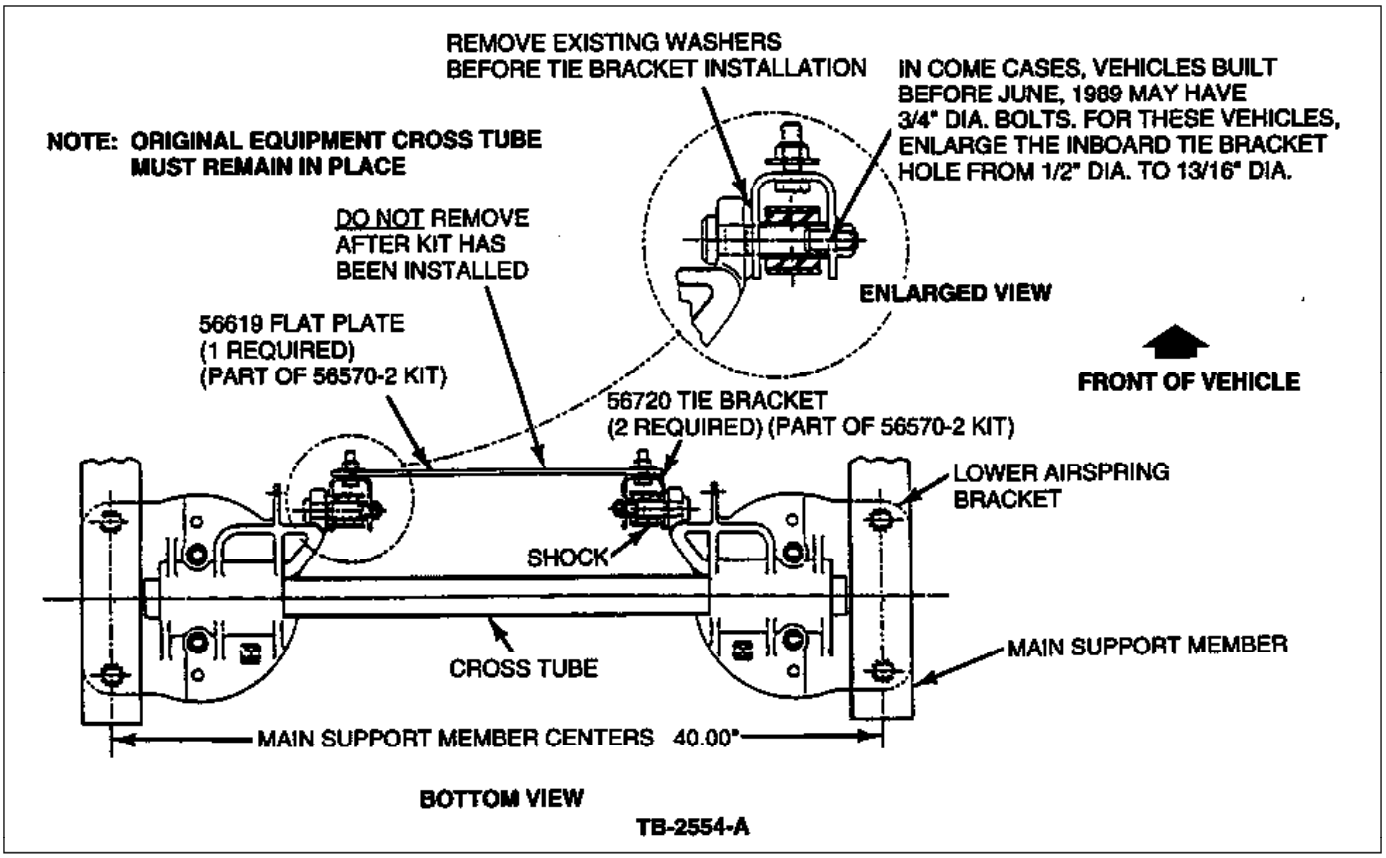


Figure 7 - Article 92-13-18

11. Tighten the U-bolt locknuts to 400 to 450 lb-ft (542-610 N-m).

    a. Center the forward tips of the main support members between the #1 spring hanger legs.

    b. Evenly tighten the locknuts in 50 lb-ft (68 N-m) increments.

    c. After reaching 400 to 450 lb-ft (542-610 N-m), rap the top of the U-bolts with a hammer and retighten to 400 to 450 lb-ft (542-610 N-m).

RIDE HEIGHT ADJUSTMENT AND AXLE ALIGNMENT

After all modifications are complete, air up the suspension system.

1. Remove the frame and jack stands.

2. Verify that the ride height is correct as shown in figure 3. The adjustment procedure is detailed in the 1992 L-Series Service Manual, pages 14-02E-9 and 10.

3. Confirm that the alignment of the suspension is in accordance with the detailed instructions on Pages 04-00-8 and 9 of the Service Manual.

U-BOLT TORQUE CHECK AND RETIGHTEN INTERVALS

NOTE:
RETIGHTEN U-BOLT LOCKNUTS TO 400-450 (542-610 N-m). TIGHTEN AFTER THE FIRST 1,000 MILES OF SERVICE. RETIGHTEN AGAIN AT REGULAR INTERVALS AS EXPERIENCE DICTATES, NOT TO EXCEED 25,000 MILE (40,000 KM) INTERVALS.

CAUTION:
DO NOT EXCEED SPECIFIED TORQUE ON U-BOLT LOCKNUTS.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 304000, 703000, 703300

92-16, ***Publication Date: JULY 29, 1992***

• **Engine - 6.1L/7.0L Gas And 6.6L/7.8L Diesel - Flywheel Resurfacing Procedure** • **Transmission - Manual - Flywheel Resurfacing Procedure - Vehicles With 6.1L/7.0L Gas And 6.6L/7.8L Diesel Engines**	**Article No. 92-16-10**

MEDIUM/HEAVY TRUCK:
1979-93 F & B SERIES
1986-93 CARGO SERIES, L SERIES

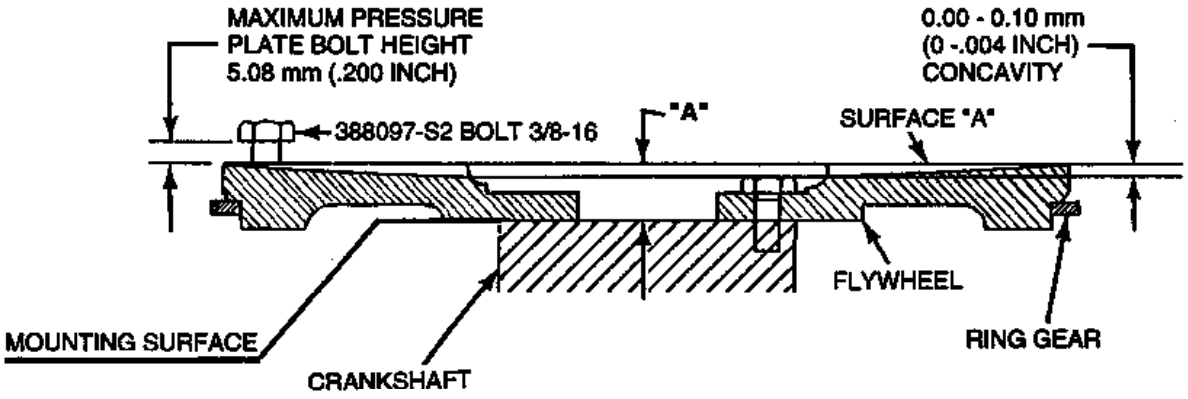
ISSUE:
A flywheel resurfacing procedure has been developed for the subject vehicles. The flywheel may be resurfaced to correct minor wear and scoring only.

ACTION:
If service is required, use the following procedure to resurface flywheels on Ford engines listed in the following Flywheel Application Chart.

WARNING:
THIS FLYWHEEL RESURFACING INFORMATION IS PROVIDED FOR GUIDANCE ONLY. FORD MOTOR COMPANY ASSUMES NO RESPONSIBILITY EITHER FOR THE RESULTS OF ANY WORK PERFORMED IN ACCORDANCE WITH THIS INFORMATION OR FOR THE ABILITY OF SERVICE PERSONNEL TO DETECT HEAT CRACKS. ANY CRACK OR HEAT CHECK IN THE FLYWHEEL COULD CAUSE IT TO BREAK, CREATING THE POSSIBILITY OF INJURY TO THE OPERATOR AND/OR BYSTANDER(S). CAREFULLY EXAMINE THE FLYWHEEL AFTER RESURFACING FOR ANY CRACKS, HEAT CHECKS OR FLYWHEEL SURFACE GROOVING. DISCARD ANY FLYWHEEL THAT SHOWS ANY OF THESE INDICATIONS. IF THERE IS ANY QUESTION, DO NOT USE THE FLYWHEEL.

CAUTION:
AFTER RESURFACING, THE FLYWHEEL MUST NOT BE LESS THAN DIMENSION "A" SHOWN IN FIGURES 2, 3 AND 4 (MINIMUM THICKNESS REQUIREMENT). IF THE MEASURED FLYWHEEL THICKNESS IN LESS THAN DIMENSION "A", THE FLYWHEEL MUST BE REPLACED. INSTALL A NEW SERVICE FLYWHEEL.

SINGLE PLATE CLUTCH (13-1)



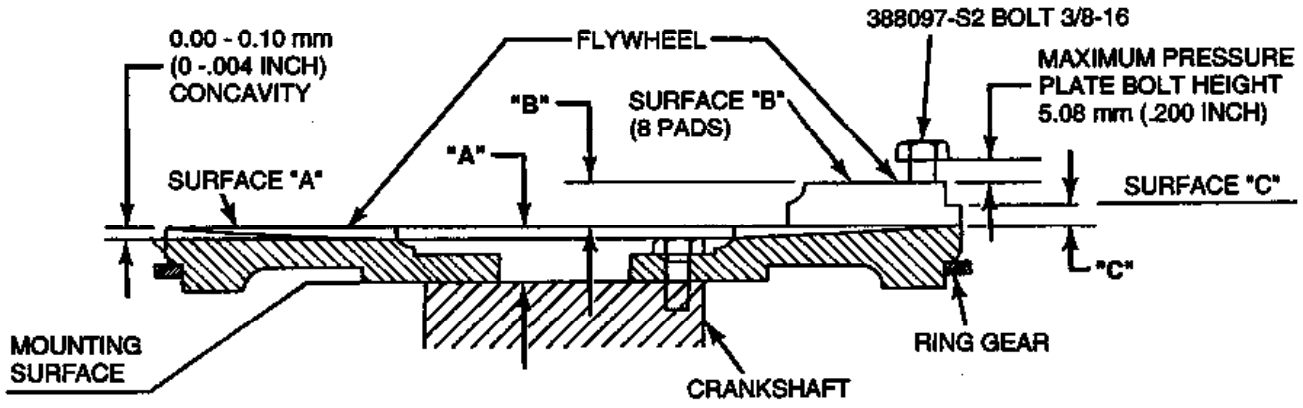
FLYWHEEL PART NUMBER	FLYWHEEL TYPE	MINIMUM DIMENSION "A" mm (INCH)
E5TZ-6375-J	GAS ENGINE FLAT	25.02 (1.005)

SURFACE "A" TO BE PARALLEL TO MOUNTING SURFACE WITHIN 0.13 mm (.005 INCH)

TB-2671-A

Figure 2 - Article 92-16-10

TWO PLATE CLUTCH (13-2)



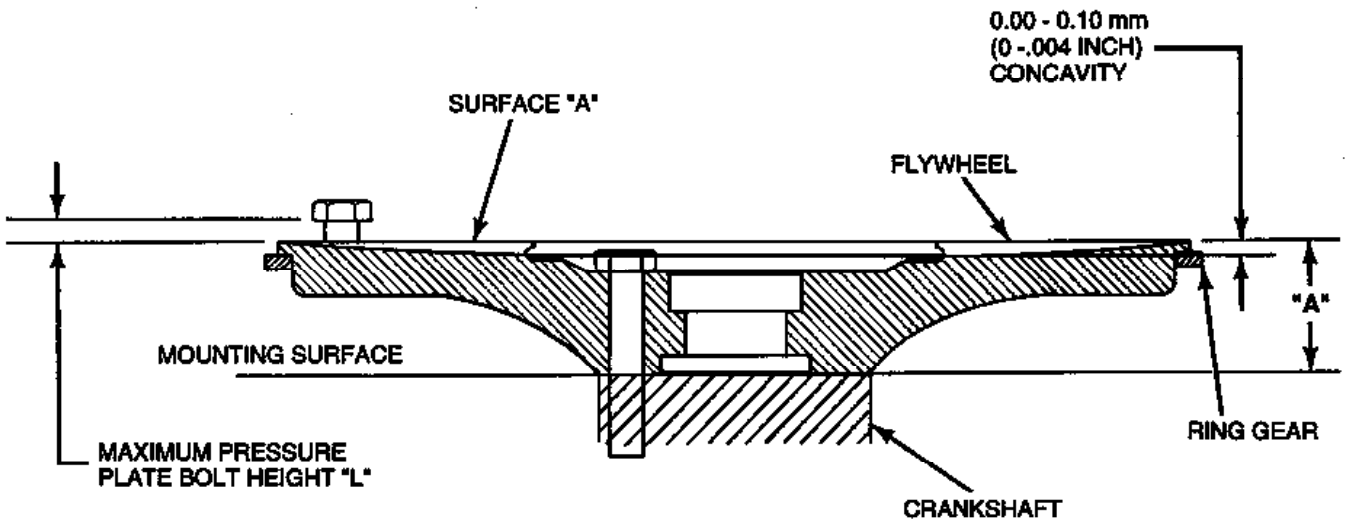
FLYWHEEL PART NUMBER	FLYWHEEL TYPE	MINIMUM DIMENSION "A" mm (INCH)	MINIMUM DIMENSION"B" mm (INCH)	MINIMUM DIMENSION"C" mm (INCH)
D9HZ-6375-A	GAS ENGINE POT	25.52 (1.005)	37.46 (1.475)	.380 (.015)

1. SURFACE "A" TO BE PARALLEL TO MOUNTING SURFACE WITHIN 0.13 mm (.005 INCH)
2. SURFACE "B" TO BE PARALLEL TO SURFACE "A" WITHIN 0.13 mm (.005 INCH)
3. SURFACE "C" TO BE PARALLEL TO SURFACE "A" WITHIN 0.13 mm (.005 INCH)

TB-2672-A

Figure 3 - Article 92-16-10

SINGLE AND TWO PLATE (14-1 AND 14-2)



FLYWHEEL PART NUMBER	CLUTCH TYPE	DIAMETER PLATE	MINIMUM DIMENSION "A" mm (INCH)	MAXIMUM BOLT "L" mm (INCH)	BOLT NUMBER	ALTERNATE BOLT NUMBER
E6HZ-6375-B	SPICER-CASIA	14-1	62.10 (2.445)	12.34 (.486)	391309-S2	—
E7HZ-6375-A	CAST COVER	14-2	62.10 (2.445)	40.79 (1.606)	391310-S2	—
FOR USAGE	SPICER-SAS	14-1	62.10 (2.445)	6.60 (.260)	391395-S2	383999-S2
REFER TO	STAMPED COVER	14-2	62.10 (2.445)	35.05 (1.380)	389421-S2	—
FLYWHEEL APPLICATION (CHART ONE)	EATON-VALEO DIAPHRAGM SPRING	14-1	62.10 (2.445)	6.60 (.260)	391395-S2	383999-S2

SURFACE "A" TO BE PARALLEL TO MOUNTING SURFACE WITHIN 0.13 mm (.005 INCH)

Figure 4 - Article 92-16-10

FLYWHEEL RESURFACING MACHINING REQUIREMENTS

1. Inspect the flywheel for cracks, heat checks, flywheel surface grooving or any damage that would make it unfit for further use.

   WARNING:
   ANY OF THESE CONDITIONS COULD CAUSE THE FLYWHEEL TO DISINTEGRATE, CREATING THE POSSIBILITY OF INJURY TO THE VEHICLE OPERATOR AND/OR BYSTANDERS. THE FLYWHEEL SHOULD BE DISCARDED IF THERE IS A QUESTION CONCERNING ITS SAFETY.

   NOTE:
   THE RECOMMENDED METHOD WHEN CHECKING FOR FLYWHEEL CRACKS IS DYE PENETRANT OR A MAGNA FLUX MACHINE

2. After machining, mount the flywheel rigidly on a crankshaft mounting flange or actual engine crankshaft and be sure to meet the following machining requirements.

   - Flywheel surface "A" should be parallel to the mounting surface within 0.13 mm (.005"). See Figures 2, 3 and 4.

   - The surface runout must not exceed 0.165 mm (.0065") Total Indicated Runout (T.I.R.) for the 13" clutch; 0.177 mm (.007") T.I.R. for the 14" clutch. See Figure 1.

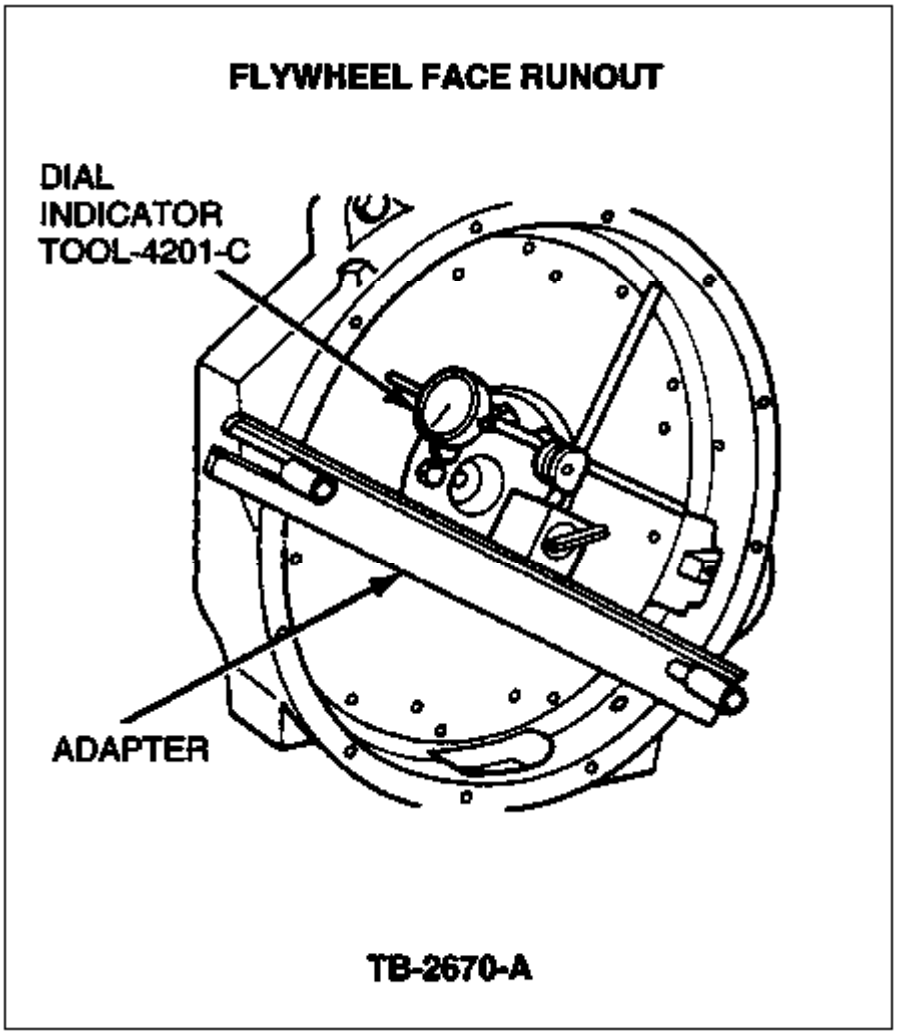


Figure 1 - Article 92-16-10

- The surface finish can be no greater than 4.0 micrometer (160 microinch maximum).
- The flywheel surface "A" must have 0.0 to 0.10 mm (.004") concavity. If the flywheel is convex, the I.D. of the disc assembly lining will contact the I.D. of the flywheel first. This could cause the clutch to slip. See Figures 2, 3 and 4.
- Flywheel thickness must not be less than dimension "A" shown in Figures 2, 3 and 4.

3. When resurfacing the pot flywheel for the 13", 2 plate clutch, surfaces "B" and "C" shown in Figure 3, must be machined down the same as flywheel friction surface "A" (surfaces "A", "B" and "C" must have the same amount of material removed).

4. All eight (8) clutch pressure plate mounting bolts must be hand tightened into the flywheel to the maximum dimension shown in the flywheel Figures 2, 3 and 4.

   a. Measure the bolt height as shown in Figures 2, 3 and 4.

   b. If the maximum bolt height dimension is exceeded, replace the flywheel.

   NOTE:
   USE ONLY CLUTCH MOUTING BOLTS RECOMMENDED BY FORD.

5. inspect the ring gear for worn, chipped or cracked teeth. If the teeth are damaged, replace the ring

gear. Refer to the Dealer Master Parts Catalog for correct parts usage.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage, Powertrain Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 499000, 505000, 506000

92-18, ***Publication Date: AUGUST 26, 1992***

Air Conditioning - New Refrigerant Fitting "O" Rings (Green Color) Available To Provide Improved Sealing And Durability	**Article No. 92-18-14**

MEDIUM/HEAVY TRUCK:
1987-92 F & B SERIES
1991-92 L SERIES

ISSUE:
New refrigerant O-rings (GREEN COLOR) are available for use in the Ford Spring Lock Couplings (SLC) and threaded (Tube-O) connections. The new GREEN COLORED O-ring material provides improved sealing and longer seal life. Use of any other O-rings for Ford refrigerant fittings is not recommended and may result in premature leakage at the fitting.

ACTION:
If a refrigerant system repair is made which requires an A/C fitting to be disconnected, replace the existing O-rings with the new GREEN COLORED type. Refer to the following O-ring Usage Chart for identifying the correct O-ring.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 208000, 208999

• Suspension - Rear - Availability Of New Hendrickson Service Kits For Vehicles With HA-360 Or HA-400 Air Ride Suspensions And Eaton D341 Or D402 Axles • Suspension - Rear - Poor Vehicle Ride Quality And Driveline Vibration - Vehicles With Hendrickson HA-360 Or HA-400 Air Ride Suspensions And Eaton D341 Or D402 Axles • Vibration - Driveline - Availability Of New Hendrickson Service Kits For Vehicles With HA-360 Or HA-400 Air Ride Suspensions And Eaton D341 Or D402 Axles • Axle - Rear - Cracked, Damaged, Leaking Lube At Suspension Mount - Diagnostic And Repair Procedure - Availability Of New Hendrickson Service Kits For Vehicles With HA-360 Or HA-400 Air Ride Suspensions And Eaton D341 Or D402 Axles	Article No. 92-19-10

MEDIUM/HEAVY TRUCK:
1989-92 L SERIES

ISSUE:
Poor vehicle ride quality, driveline vibration and axle U-bolt hardware losing torque have resulted in several design improvements. Two new rear suspension service kits incorporating these improvements are now available for service use on the 52" axle spread and the 60" axle spread.

ACTION:
If service is required, refer to the General Diagnostic Procedure Flow Chart, Figure 1. Use the following diagnostic and correction procedure to identify and correct the confirmed concerns.

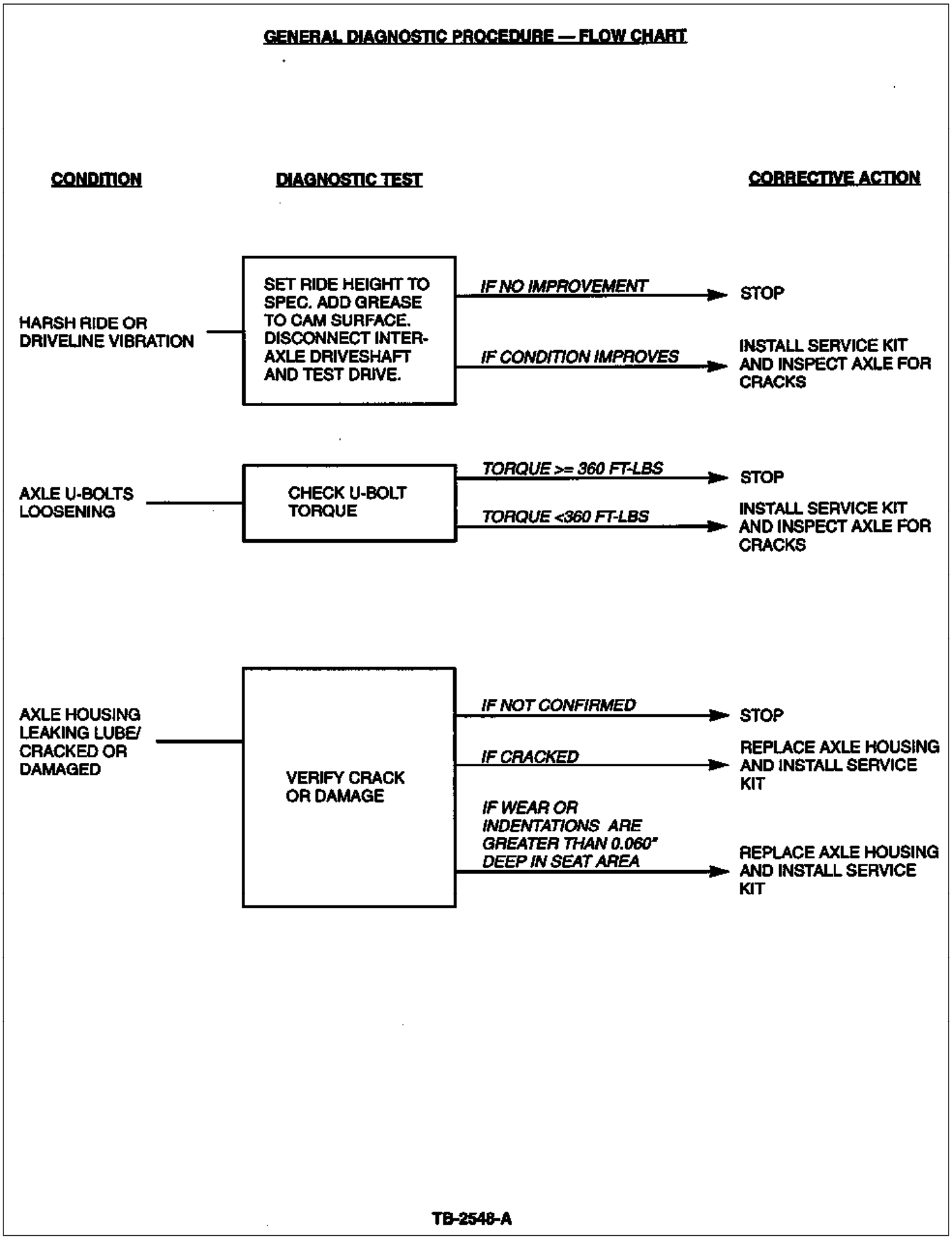

GENERAL DIAGNOSTIC PROCEDURE — FLOW CHART
CONDITION
DIAGNOSTIC TEST
CORRECTIVE ACTION
HARSH RIDE OR DRIVELINE VIBRATION
SET RIDE HEIGHT TO SPEC. ADD GREASE TO CAM SURFACE. DISCONNECT INTER-AXLE DRIVESHAFT AND TEST DRIVE.
IF NO IMPROVEMENT
STOP
IF CONDITION IMPROVES
INSTALL SERVICE KIT AND INSPECT AXLE FOR CRACKS
AXLE U-BOLTS LOOSENING
CHECK U-BOLT TORQUE
TORQUE >= 360 FT-LBS
STOP
TORQUE <360 FT-LBS
INSTALL SERVICE KIT AND INSPECT AXLE FOR CRACKS
AXLE HOUSING LEAKING LUBE/ CRACKED OR DAMAGED
VERIFY CRACK OR DAMAGE
IF NOT CONFIRMED
STOP
IF CRACKED
REPLACE AXLE HOUSING AND INSTALL SERVICE KIT
IF WEAR OR INDENTATIONS ARE GREATER THAN 0.060" DEEP IN SEAT AREA
REPLACE AXLE HOUSING AND INSTALL SERVICE KIT
TB-2548-A

Figure 1 - Article 92-19-10

SERVICE KIT DESCRIPTION

The components included in the Hendrickson rear suspension service kits (F2HZ-5L793-C for 52" axle spread and F2HZ-5L793-D for 60" axle spread) are identified in detail in Figure 2.

HA 360/400 FPSD SERVICE KIT COMPONENTS — 52" AND 60" AXLE SPREAD, EATON D341 OR D402 AXLES

	HENDRICKSON KIT #56612-073 52" AXLE SPREAD		HENDRICKSON KIT #56612-074 60" AXLE SPREAD	
PART DESCRIPTION	HENDRICKSON PART NUMBER	QUANTITY	HENDRICKSON PART NUMBER	QUANTITY
SLIPPER PAD KIT	56557-001	4	56557-001	4
TOP PAD	49337	4	49337	4
DELRIN LINER (PIA w/BEAM)	47905	4	47905	4
SPRING SEAT - FRONT LH	56501-013	1	56501-013	1
SPRING SEAT - FRONT RH	56503-014	1	56503-014	1
SPRING SEAT - REAR LH	56828-003	1	56828-005	1
SPRING SEAT - REAR RH	56828-004	1	56828-006	1
BOTTOM CAP - FRONT LH	49064	1	49064	1
BOTTOM CAP - FRONT RH	49134	1	49134	1
BOTTOM CAP - REAR LH	49138	1	49138	1
BOTTOM CAP - REAR RH	49139	1	49139	1
SPHERICAL WASHER	48574	16	48574	16
FLAT WASHER 7/8	22962-002	16	22962-002	16
NUT 7/8 - 14 HEX	50765-000	16	50765-000	16
U-BOLT 7/8 - 14 x 16.25" LONG	47417-001	2	47417-001	2
U-BOLT 7/8 - 14 x 15.00" LONG			47417-007	2
U-BOLT 7/8 - 14 x 14.00" LONG	47417-006	6	47417-006	4
TIE BRACKET KIT	56570-2	1	56570-2	1
RIDE HEIGHT GAUGE	45745-050	1	45745-050	1

TB-2661-A

Figure 2 - Article 92-19-10

NOTE:
BECAUSE THE CONDITIONS DESCRIBED ARE CLOSELY RELATED, ALL COMPONENTS IN THE KIT MUST BE INSTALLED AS DIRECTED.

Even if the parts on the vehicle appear okay, all of the parts in the kit must be installed. The only parts used for service which are not released for production are contained in Tie Bracket portion of the kit. The tie brackets connect the lower ends of the left and right shock absorber mounts to assure that proper Main Support Member (MSM) spacing is maintained during kit installation.

HARSH RIDE, DRIVELINE VIBRATION

Harsh ride may be due to excessive suspension friction or to incorrect driveline angles.

1. Confirm that the ride height is correct as shown in Figure 3. The adjustment procedure is detailed in the 1992 L-Series Shop Manual, Pages 04-02E-9 and 10.

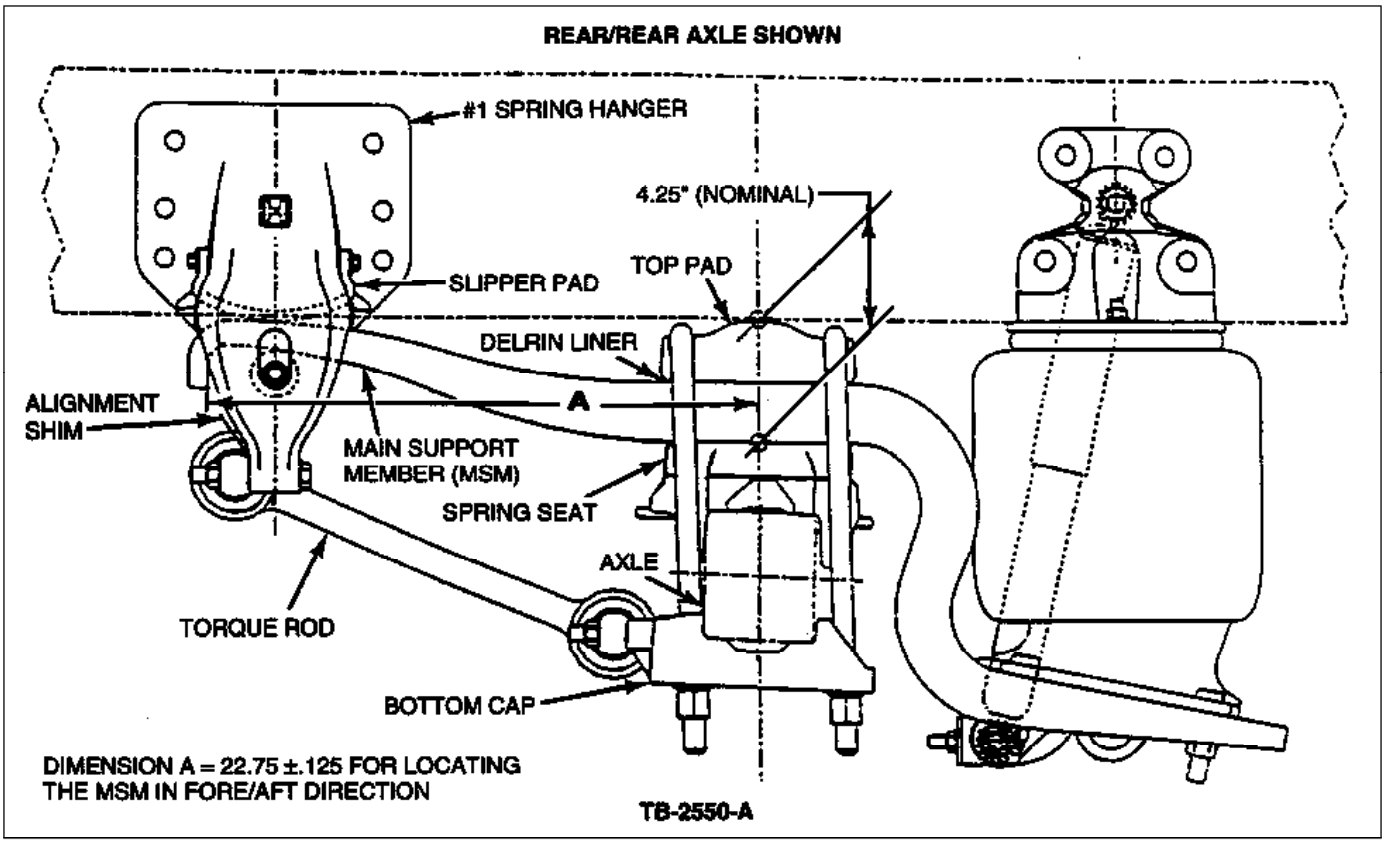


Figure 3 - Article 92-19-10

2. Determine if the vehicle's ride can be improved by adding the slipper or revising driveline angles.

    a. Apply some chassis grease between the bracket cam surface and the Main Support Member (MSM), Figure 3.

    b. Remove the inter-axle driveshaft.

3. If a test drive indicates an improved ride, install the entire service kit per the Modification Instructions beginning on the following page of this article.

    a. Tighten the U-bolts to the new service torque of 400 to 450 lb-ft (542-610 N-m).

    b. When the axles are unbolted from the suspension, inspect the axle housing for cracks with the dye penetrant procedure in Step 8 of the following Modification Instructions.

SUSPENSION "U-BOLT" TORQUE RETENTION

Vehicles in severe service applications may experience loosening of the axle attachment U-bolts.

1. Measure the U-bolt torque.

2. If any U-bolt torque is below 360 lb-ft (488 N-m), install the entire service kit per the Modification Instructions which follow.

    a. Tighten the U-bolts to the new service torque of 400 to 450 lb-ft (542-610 N-m).

    b. When the axles are unbolted from the suspension, inspect the axle housing for cracks with the dye penetrant procedure in Step 8 of the following modification instructions.

AXLE HOUSING LEAKING LUBE OR CRACKED OR DAMAGED

Severe duty applications occasionally experience cracked axle housings.

1. If the axle is still bolted to the suspension, visually verify the leak or observable crack.

2. If the axle is unbolted from the suspension, conduct the dye penetrant procedure in Step 8 of the following Modification Instructions.

3. If the housing is determined to be cracked, the housing must be replaced as described in the L-Series Service Manual and the entire service kit must be installed per the Modification Instructions which follow.

4. Tighten the U-bolts to the new service torque of 400 to 450 lb-ft (542-610 N-m).

CAUTION:
DO NOT ATTEMPT TO REPAIR A CRACKED AXLE HOUSING BY WELDING.

MODIFICATION INSTRUCTIONS

NOTE:
BEFORE PROCEEDING, IT IS IMPORTANT THAT MAINTENANCE PERSONNEL FIRST READ AND UNDERSTAND THE SAFETY WARNINGS AND FOLLOW THE ASSEMBLY INSTRUCTIONS AND TIGHTENING TORQUE SPECIFICATIONS CONTAINED IN THE 1992 L-SERIES SERVICE MANUAL, SECTION 04-02E, EXCEPT FOR THE U-BOLT TORQUE.

The service torque for the HA suspension U-bolts will be revised in the 1993 L-Series Service Manual to 400 to 450 lb-ft (542-610 N-m).

NOTE:
LEFT AND RIGHT SIDE MODIFICATIONS FOR EACH AXLE ARE TO BE COMPLETED AT THE SAME TIME.

1. The vehicle must be empty of all load. (Work on an empty vehicle.)

2. Chock the wheels of all the axles.

3. Support the frame with frame stands.

4. Support the axles with jack stands.

5. Release all air from the air springs.

6. Install the #1 spring hanger slipper pads.

   a. Remove the rebound bolt locknuts, washers, bolts, spacers and rollers. The torque rods can remain in place, Figure 4.

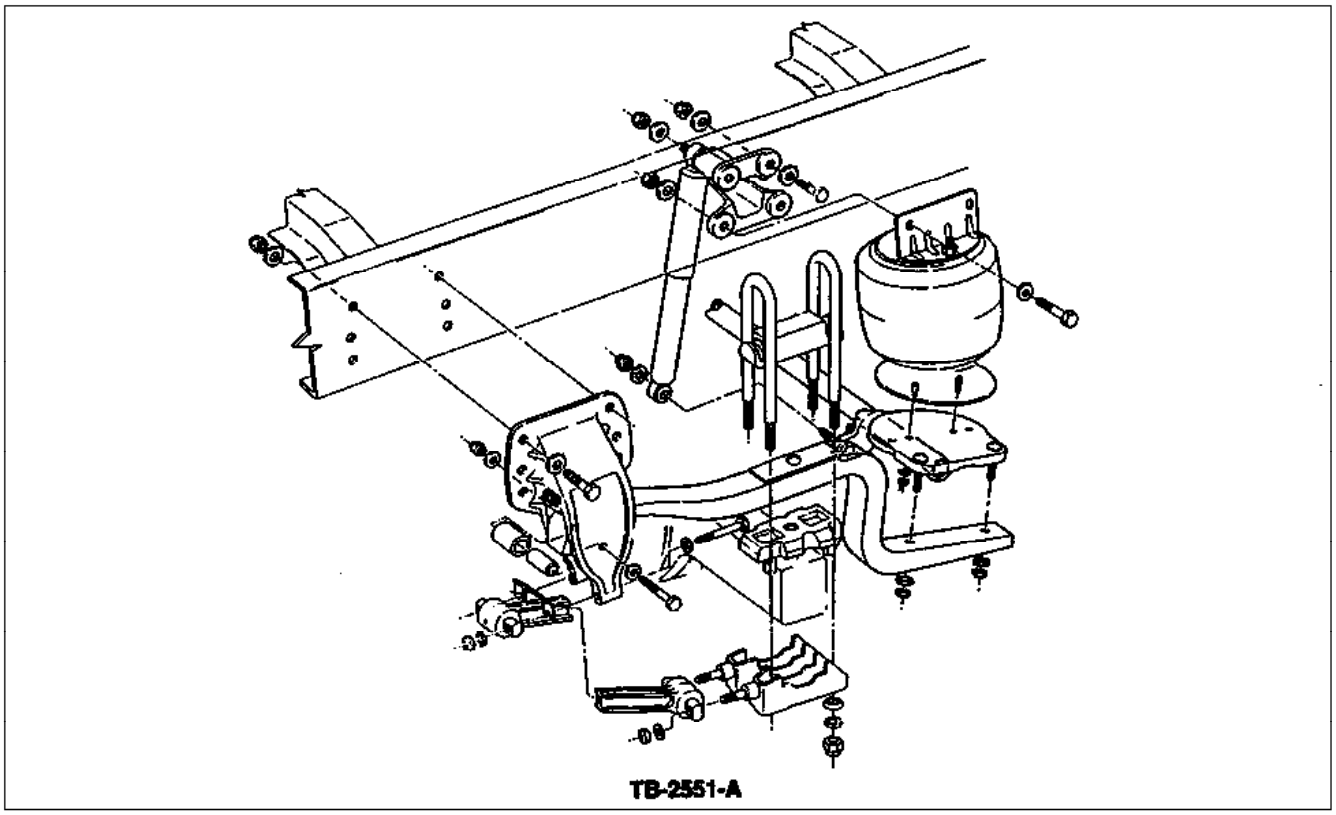


Figure 4 - Article 92-19-10

b. Apply an upward force on the cross tube or lower air spring brackets with a jack or pry bar. This will cause the tips of the main support members to drop away from the cam surface of the #1 spring hangers.

c. Inspect the hanger bracket cam surfaces and the corresponding top sides of the main support members.

- The frame hanger should not be replaced unless a leg has been grooved by the main support member in excess of 1/8" (3.2mm) or if the cam is cracked or worn through.
- The main support member should not be replaced unless it has been worn so that it is 5/16" (7.9mm) thick or less at the frame hanger cam contact area.
- If any main support member is replaced from current Ford service stock, discard the PIA stiffener plate.

d. Assemble the slipper pads per Figure 5. This requires drilling 11/32" (17.5mm) holes in the frame brackets using the slipper as a template.

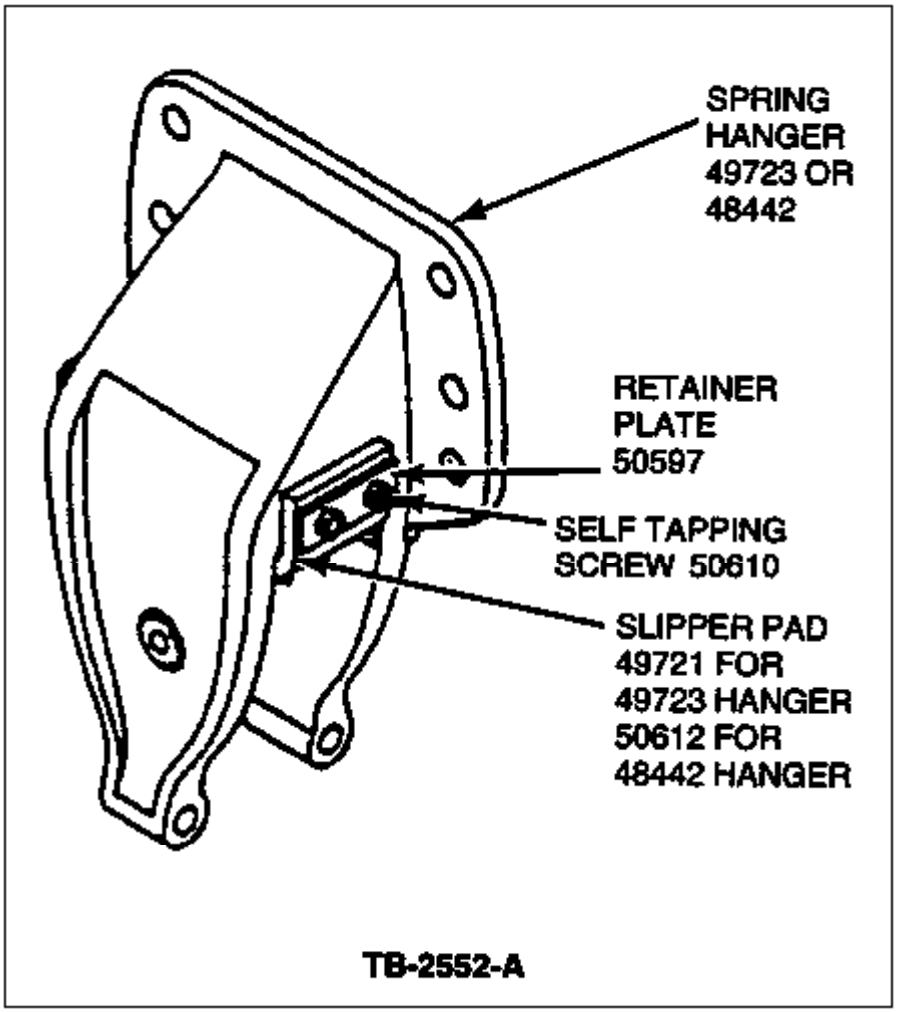


Figure 5 - Article 92-19-10

e. Lubricate the threads of the self tapping screws before assembly to obtain the correct torque. Torque the screws to 17 to 24 lb-ft (23-33 N-m)

CAUTION:
REMOVE DRILL SHAVINGS FROM THE MAIN SUPPORT MEMBER PRIOR TO RELEASING THE JACK OR PRY BAR (NEXT STEP) TO AVOID IMBEDDING SHAVINGS IN THE SLIPPER PAD MATERIAL.

f. Release the jack or pry bar on the cross tube or lower air spring brackets, allowing the main support members to come up to the new slipper pads.

g. Assemble the rebound bolt rollers, spacers, bolts, washers and locknuts. Tighten the locknuts to specifications.

h. Repeat the sequence for the other axle.

7. Remove the axle clamp hardware, Figure 6.

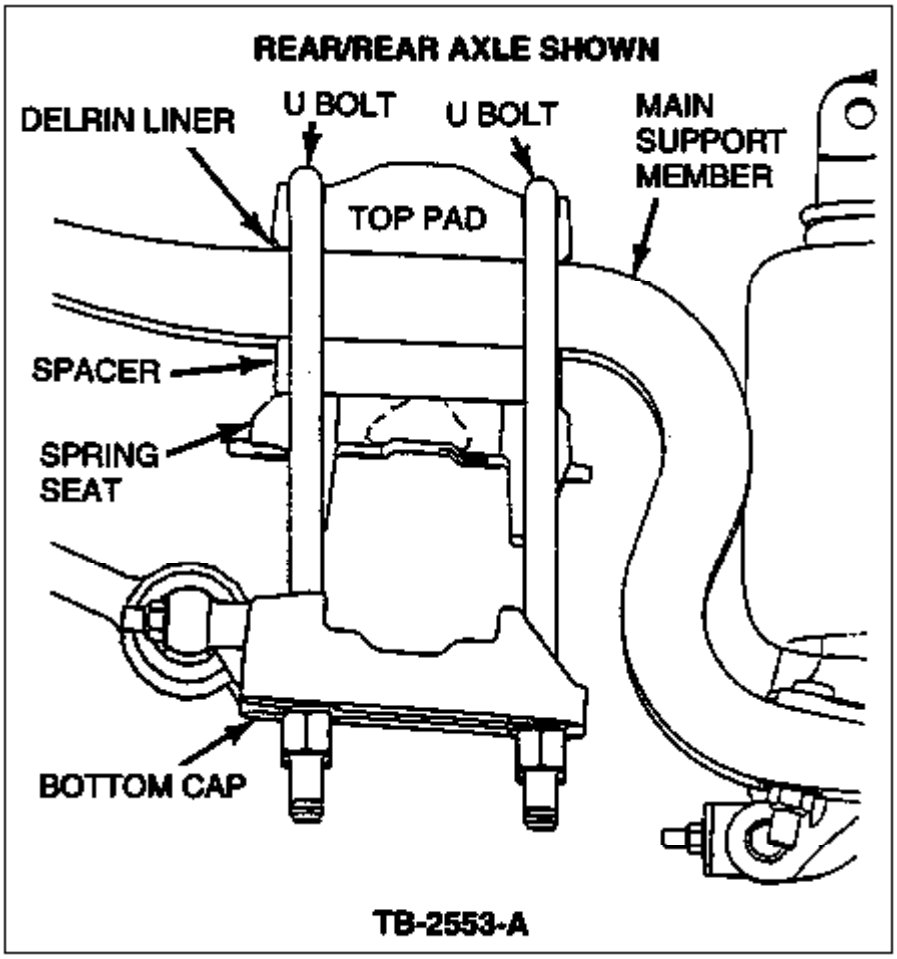


Figure 6 - Article 92-19-10

WARNING:
EXERCISE EXTREME CARE WHEN HANDLING THE MAIN SUPPORT MEMBERS. DO NOT CONNECT ARC WELDING GROUND LINE TO THE MAIN SUPPORT MEMBERS. DO NOT STRIKE AN ARC WITH THE ELECTRODE ON THE MAIN SUPPORT MEMBERS. DO NOT NICK, GOUGE OR SIMILARLY ABUSE THE MAIN SUPPORT MEMBERS. A MAIN SUPPORT MEMBER THAT HAS BEEN SUBJECTED TO ANY OF THESE CONDITIONS MAY FRACTURE, CAUSING LOSS OF VEHICLE CONTROL AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.

a. Remove the torque rod locknuts on the axle bottom cap.

b. Remove and discard the U-bolt locknuts, washers, U-bolts, bottom cap, spring seat, Delrin liner, stiffener plate and top pad.

8. The following procedure is to be completed after removal of the axle and suspension hardware from the vehicle and prior to the installation of the new suspension components into the vehicle.

a. Thoroughly clean the axle housings in the areas where the suspension seats and caps contact the housings.

b. Inspect the axle housings in the areas where the suspension seats and caps contact the housings for evidence of wear, indentations, and other indications that the caps or seats were loose on the housings. Any evidence of wear or indentations greater than 0.060" (1.5mm) deep requires replacement of that axle housing.

NOTE:

AXLE HOUSINGS MAY BE ORDERED THROUGH FPSD AND ARE DIRECT SHIPPED FROM EATON. IF THERE IS ANY QUESTION AS TO WHETHER A HOUSING NEEDS TO BE REPLACED, CONTACT YOUR LOCAL EATON REPRESENTATIVE OR CALL 1-800-TCM-HELP (U.S.) OR 1-416-790-0000 (CANADA).

c. Inspect the axle housings in the areas where the suspension seats and caps contact the housing for evidence of cracks using the dye-penetrant method. Follow the instructions supplied with the dye-penetrant material. Any evidence of cracks in an axle housing in the parent (non-welded) material of the housing requires replacement of the axle housing.

CAUTION:
DO NOT ATTEMPT TO REPAIR ANY CRACK IN THE HOUSING WALL BY WELDING OR OTHER MECHANICAL METHODS.

d. Prepare the top of the axle housing in the area of the spring seat. Remove any weld deposits, nicks and burrs. Clean the housing of dirt and grease. Check that the housing surfaces are flat and square in the areas of suspension contact.

e. If the axle was originally equipped with dowels in the top of the housing, they may have been damaged or squared off. It is not necessary to replace either the dowels or the housings if the pins are damaged. The pins may be filed or ground, as required, to aid in the assembly of the new suspension hardware.

9. Position the new seat on the axle housing. The center to center distance between the left and right seats is always 40.00" (1016mm).

CAUTION:
DO NOT WELD THE SEATS TO THE AXLE HOUSING.

It is possible that the main support member center bolt stud is damaged or sheared off. Do not attempt to repair or replace the stud. As long as there is no other obvious damage, the main support member can be reused as is, centering it on the spring seat. In addition to using "witness" marks, the main main support member can be located in fore/aft direction by using dimension "A" shown in Figure 3.

a. Position the main support member on the seat.

b. Position the new Delrin liner on top of the main support member.

c. Position the new thicker top pad on the new Delrin liner.

NOTE:
OLDER MAIN SUPPORT MEMBERS MAY NOT HAVE THE DIMPLE IN THE TOP SURFACE FOR THE NEW TOP PAD PILOT BUTTON. IF THIS IS THE CASE, THE PILOT BUTTON ON THE NEW TOP PAD MUST BE REMOVED USING A STANDARD SHOP BENCH GRINDER.

d. Assemble the new U-bolts, axle bottom caps, spherical washers, flat washers and locknuts, but do not tighten at this time.

10. Install the tie bracket assemblies, Figure 7. By adding this kit before the U-bolts are tightened, the correct main support member spacing of 40.00" will be established.

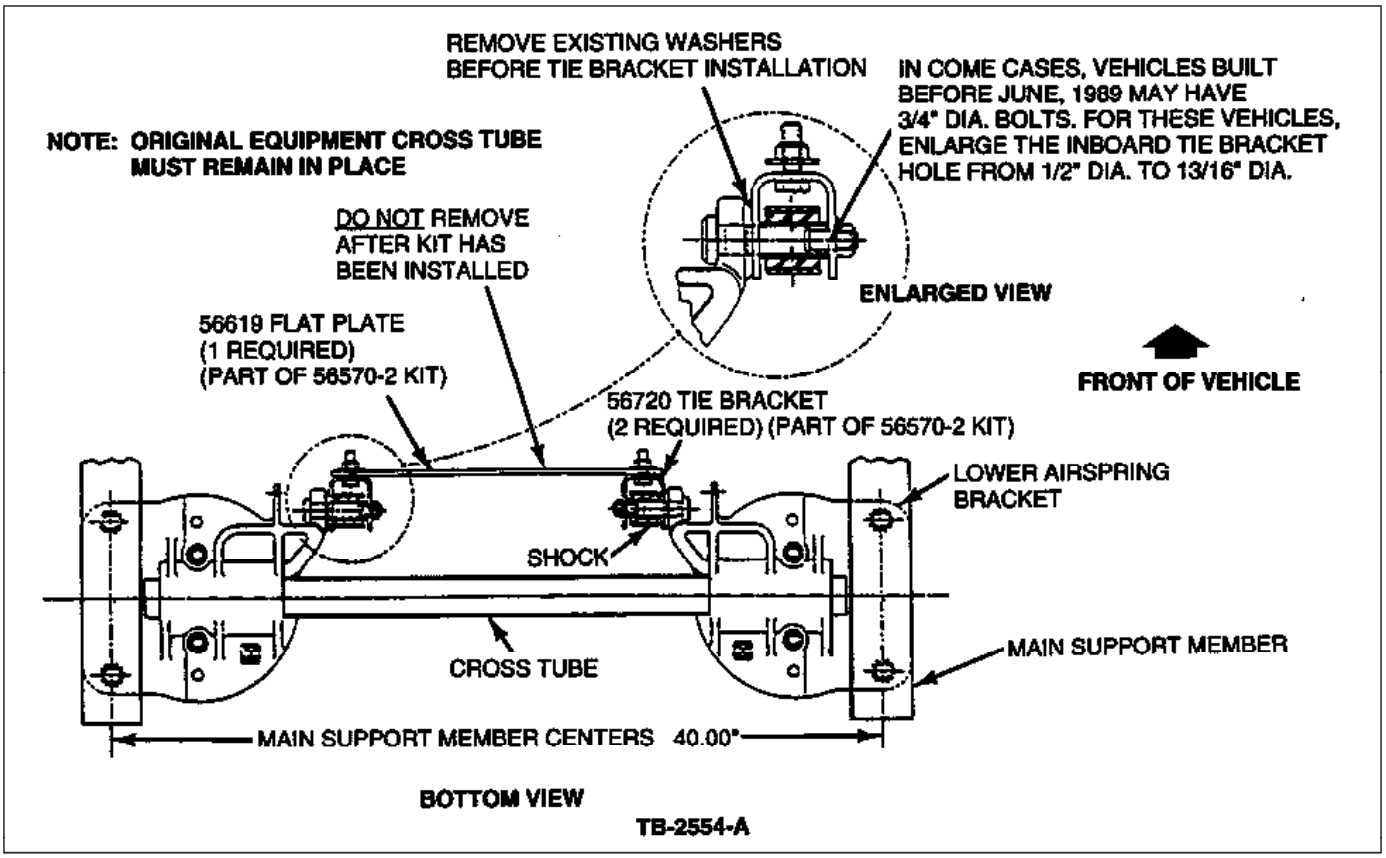


Figure 7 - Article 92-19-10

11. Tighten the U-bolt locknuts to 400 to 450 lb-ft (542-610 N-m).

    a. Center the forward tips of the main support members between the #1 spring hanger legs.

    b. Evenly tighten the locknuts in 50 lb-ft (68 N-m) increments.

    c. After reaching 400 to 450 lb-ft (542-610 N-m), rap the top of the U-bolts with a hammer and retighten to 400 to 450 lb-ft (542-610 N-m).

RIDE HEIGHT ADJUSTMENT AND AXLE ALIGNMENT

After all modifications are complete, air up the suspension system.

1. Remove the frame and jack stands.

2. Verify that the ride height is correct as shown in Figure 3. The adjustment procedure is detailed in the 1992 L-Series Service Manual, pages 14-02E-9 and 10.

3. Confirm that the alignment of the suspension is in accordance with the detailed instructions on Pages 04-00-8 and 9 of the Service Manual.

U-BOLT TORQUE CHECK AND RETIGHTEN INTERVALS

NOTE:
RETIGHTEN U-BOLT LOCKNUTS TO 400-450 (542-610 N-m). TIGHTEN AFTER THE FIRST 1,000 MILES OF SERVICE. RETIGHTEN AGAIN AT REGULAR INTERVALS AS EXPERIENCE DICTATES, NOT TO EXCEED 25,000 MILE (40 000 KM) INTERVALS.

CAUTION:
DO NOT EXCEED SPECIFIED TORQUE ON U-BOLT LOCKNUTS.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 304000, 703000, 703300

92-21, ***Publication Date: OCTOBER 7, 1992***

Turbocharger - 7.8L Ford Diesel Engine - Service Parts Return Of Obsolete Parts Built Prior To 8/19/92	Article No. 92-21-13

MEDIUM/HEAVY TRUCK:
1988-90 F & B SERIES, L SERIES

ISSUE:
The subject turbochargers (E7HZ-6K682-E and E8HZ-6K682-C) may not meet Ford's high quality requirements due to improper rebuilding of the turbocharger assemblies. They should be withdrawn from your inventory and returned to your facing PDC within 30 days of this TSB.

ACTION:
Perform 100% sort of all stock on hand. Suspect stock has a date prior to 8/19/92. The date code is located on the unit carton nomenclature panel. Return the prior dated parts from your dealership's inventory.

1. Return obsolete (E7HZ-6K682-E and E8HZ-6K682-C) to your facing PDC using the least expensive transportation.

2. Complete a separate FPS-340 claim for these parts.

3. Indicate Reason "J" on the claims.

4. In the Remarks Section write "Returned per TSB 92-21-13".

LIMITS

- The returns must be received within 30 days from the date of this TSB.
- Returns are restricted to the subject parts.
- The parts returned must have been purchased from FPSD in accordance with Policy and Procedure Bulletin 4000.

CREDIT

Credit for parts and prepaid freight costs will be issued.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 499000

92-22, ***Publication Date: OCTOBER 21, 1992***

Headlamp Switch - Retrofit Procedure To Include Park Lamp Operation	Article No. 92-22-11

MEDIUM/HEAVY TRUCK:
1992 L SERIES

ISSUE:
The 1992 L-Series headlamp switch does not include a parklamp only position. A retrofit procedure has been developed fo include a parklamp operation only feature.

ACTION:
If a parklamp only headlamp switch position is desired, use the following service procedure.

SERVICE PROCEDURE

1. Locate and remove the 15 amp circuit breaker for the headlamp switch from the circuit breaker fuse panel.

2. Remove the right hand side instrument panel. Refer to the 1992 L-Series Service Manual, Section 01-12, for removal procedure.

3. Disconnect and remove the headlamp switch from the panel. Refer to the 1992 L-Series Service Manual, Page 07-01-22, for removal procedure.

4. Locate the marker/tail lamp relay on the fuse panel, Figure 1, and remove the relay. Loosen the connector from the instrument panel.

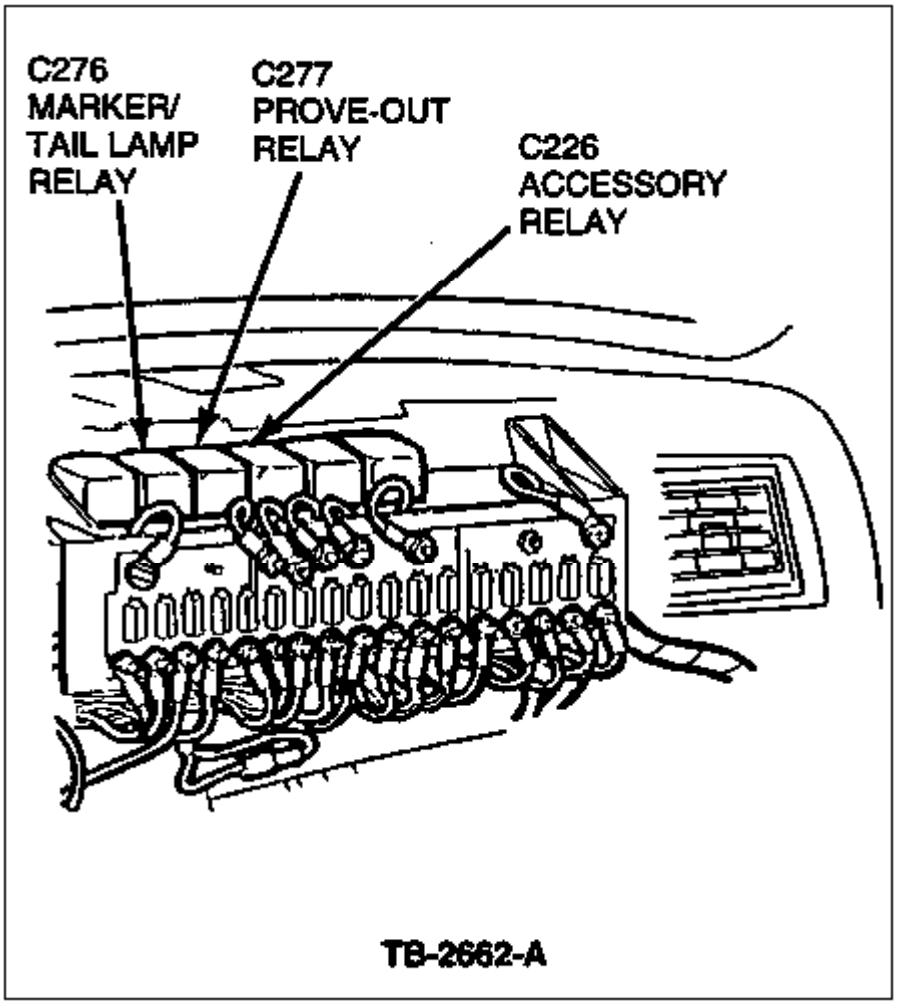


Figure 1 - Article 92-22-11

5. Remove the red/yellow wire terminal from the relay connector block, circuit 15, and cut the terminal from the wire end, Figure 2.

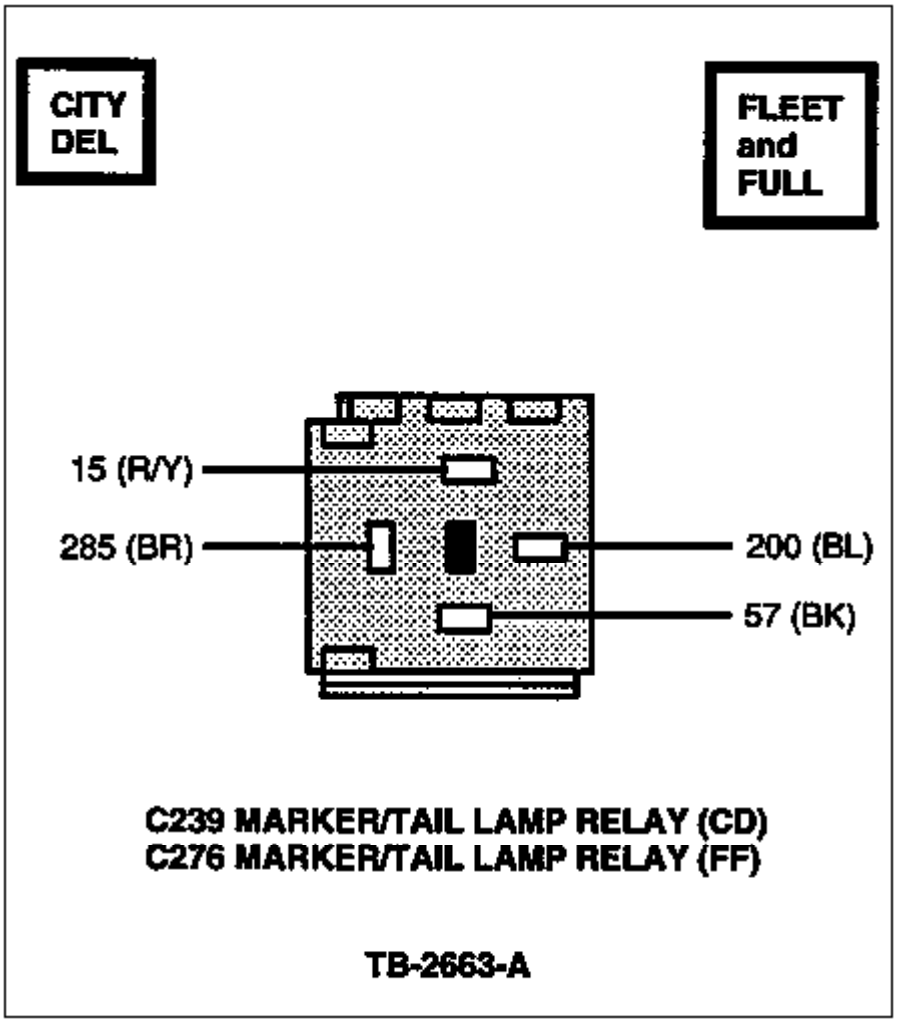


Figure 2 - Article 92-22-11

NOTE:
TAPE THE OPEN WIRE END BACK INSIDE THE LOOM TO ISOLATE IT FROM THE SURROUNDING DASH AREA.

6. Install the new headlamp switch (FOHZ-9E704-A) in the right hand instrument panel.

7. Connect the wiring assembly jumper harness (F3HZ-13A006-A) to the switch.

8. Splice (solder) the new red/yellow wire and the black/orange wire to the original headlamp switch wires, Figure 3.

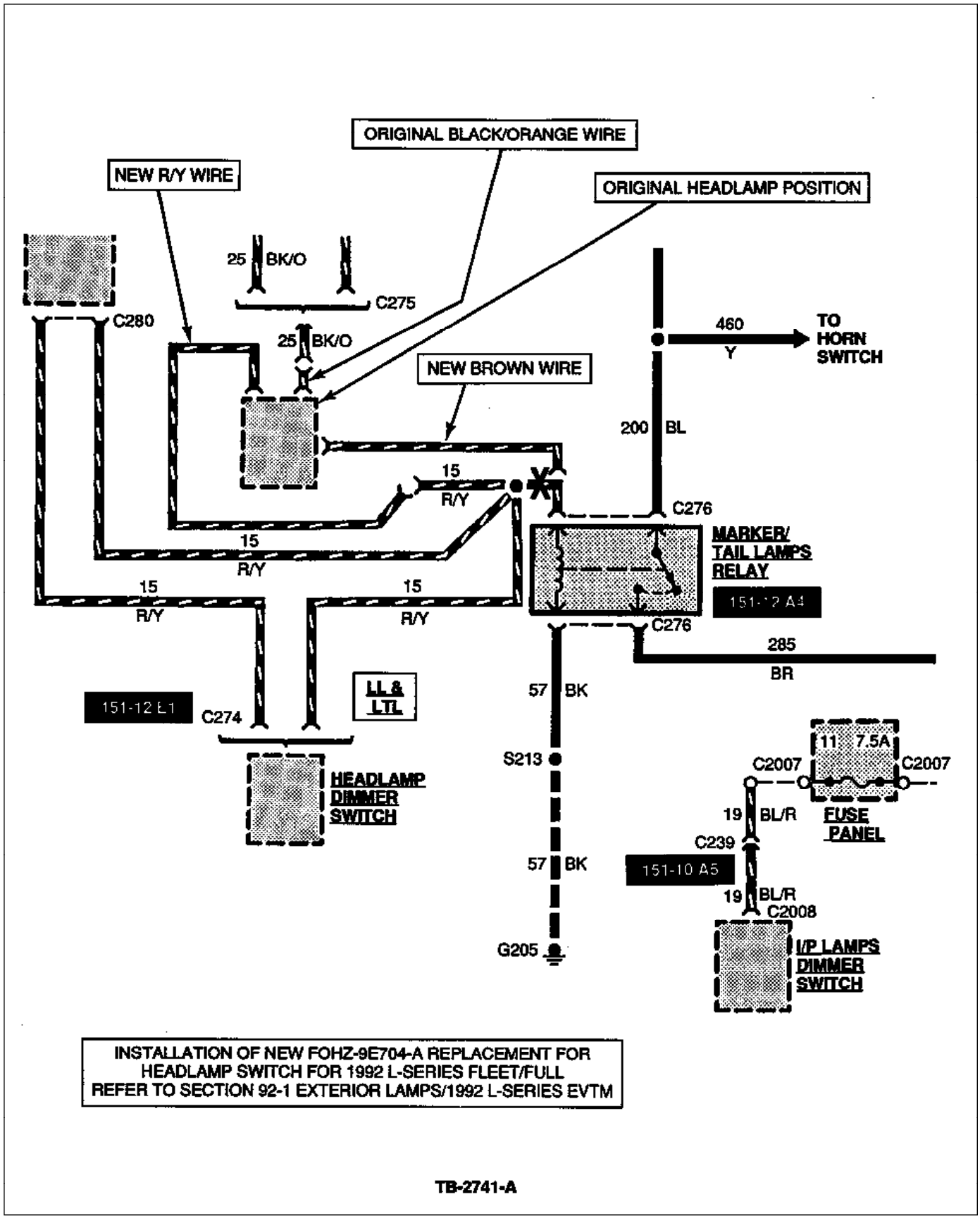


Figure 3 - Article 92-22-11

9. Route the center position brown wire to the original red/yellow wire position in the marker/tail lamp relay connector.

NOTE:
MAKE SURE IT LATCHES FIRMLY IN THE PLASTIC CONNECTOR.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 201000, 201200, 203200

92-23, ***Publication Date: NOVEMBER 4, 1992***

• Poor Performance - 7.8L (240 HP) - Air-to-Air Aftercooler Outlet Duct To Intake Manifold Cracks • Engine - 7.8L (240 HP) - Air-to-Air Aftercooler Outlet Duct To Intake Manifold Cracks • Engine - 7.8L (240 HP) - New Air Intake Rubber Hose Available For Service	Article No. 92-23-8

MEDIUM/HEAVY TRUCK:
1986-90 CARGO SERIES

This TSB article is being republished in its entirety to provide a shorter air intake hose for 1986-1989 Cargo trucks.

ISSUE:
Poor engine performance may be caused by a cracked air-to-air aftercooler outlet duct to the intake manifold.

ACTION:
Install a new, more flexible and durable air-to-air aftercooler outlet duct. Refer to the appropriate model year Cargo Truck Service Manual, Section 25-45, for details and the Parts Block for correct parts usage.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 91-20-18

WARRANTY STATUS: Eligible Under Basic And Emission Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 614000, 614500

Bulletin Contents

TSB Article 92-23-9 has been superseded by Article 93-21-21.

92-24, ***Publication Date: NOVEMBER 18, 1992***

• **Fuel System - FD1060 Diesel Engine - Injection Pump Timing Specification Change** • **Engine - FD1060 Diesel - Injection Pump Timing Specification Change**	**Article No. 92-24-14**

MEDIUM/HEAVY TRUCK:
1992 F & B SERIES, L SERIES

ISSUE:
The injection pump timing for the Ford FD1060 engine has been revised from 11° to 12° Before Top Dead Center (BTDC) on 190 and 210 HP FD1060 engines.

ACTION:
Refer to the following Fuel Injection Pump Timing Specification Change Chart for the engine serial numbers and fuel pump date codes that are affected. Any affected fuel injection pump returned to Bosch for service will be reset to the new specification.

The following engines have timing specification set at 12° before top dead center (BTDC).

NOTE:
THE FUEL INJECTION PUMP DATE CODE IS THE FIRST THREE DIGITS OF THE PUMP SERIAL NUMBER LOCATED ON THE PUMP DATA TAG AS SHOWN IN FIGURE 1.

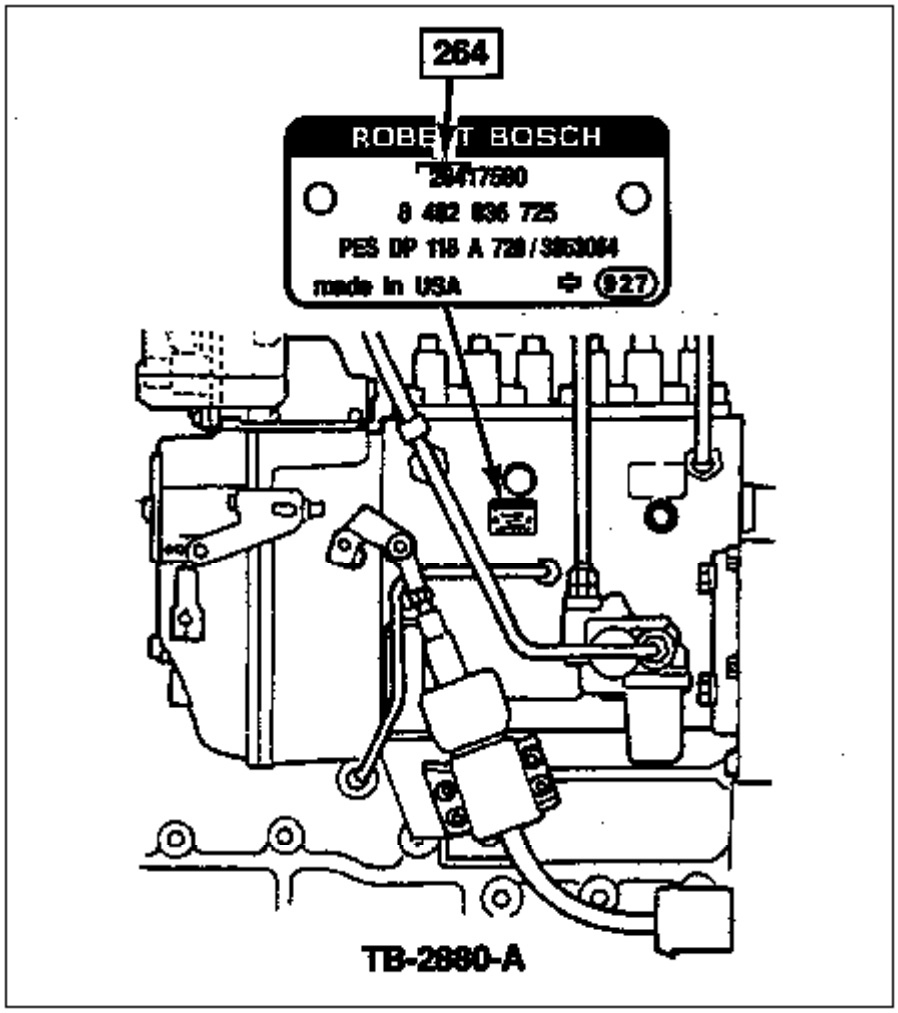
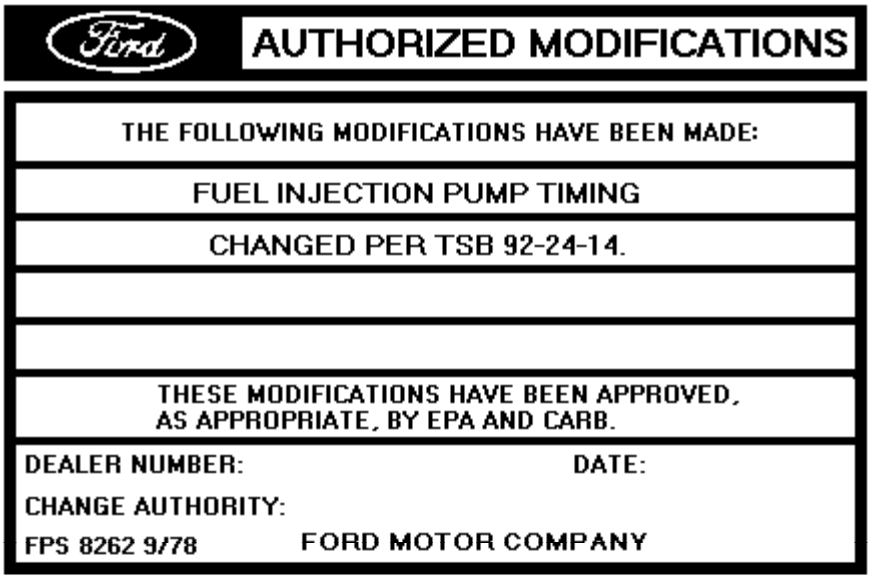


Figure 1 - Article 92-24-14

The 190 and 210 HP engines with CPLs and ESNs less than those shown in the chart were manufactured with the timing originally set at 11° BTDC. When the fuel injection pump from one of these engines has been sent to a Bosch fuel injection shop for service, they will set the timing from 11° to 12° BTDC.

NOTE:
EMISSION COMPLIANCE IS NOT AFFECTED AS LONG AS AN ENGINE MODIFICATION DECAL IS AFFIXED TO THE ENGINE NEXT TO THE IMPORTANT ENGINE INFORMATION DECAL.

Obtain an Authorized Modifications Decal and list the date, dealer number, and summary of alterations performed. Select a prominent place adjacent to the Vehicle Emission Control Information Decal suitable for installing the Authorized Modifications Decal. Clean the area, install the decal, and cover it with a clear plastic decal shield.



OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 404000, 490000, 499000

92-24, ***Publication Date: NOVEMBER 18, 1992***

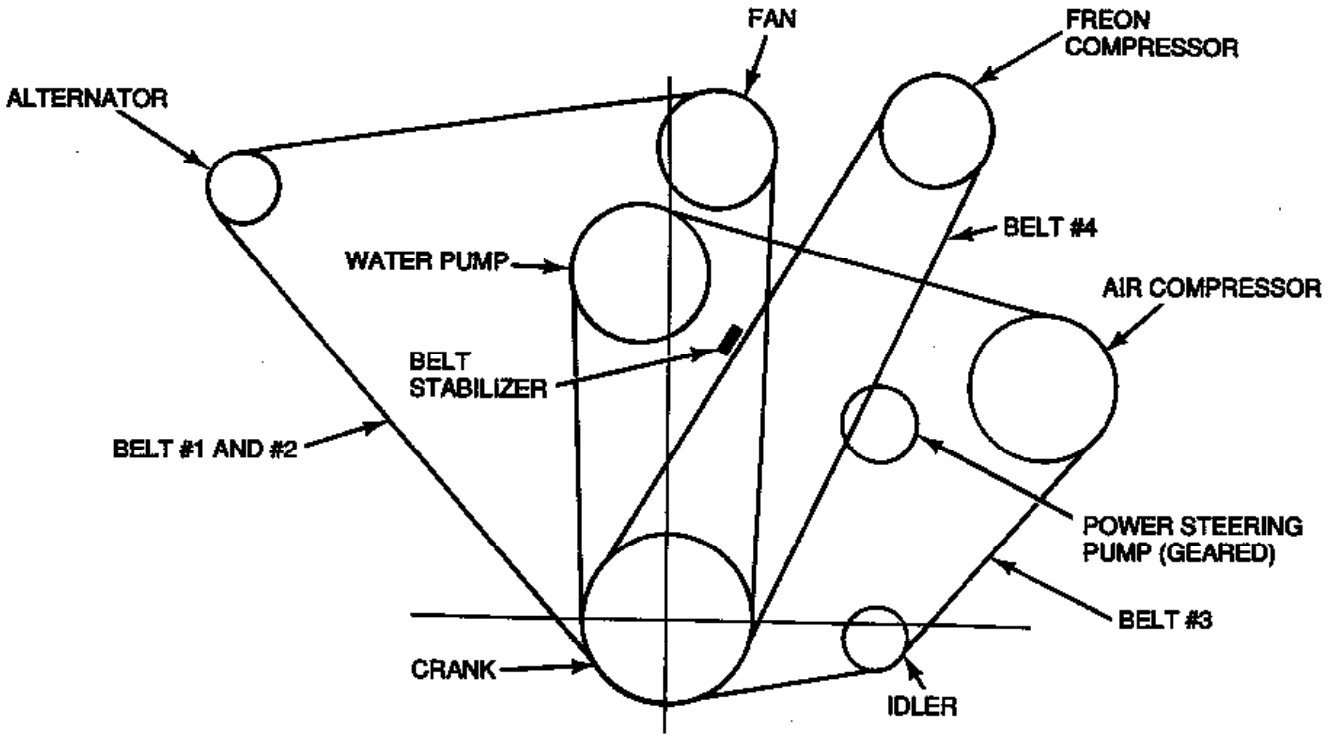
• **Air Conditioning - Compressor Drive Belt Jumps Off - 7.8L Ford Diesel Engine** • **Accessory Drive Belt - 7.8L Ford Diesel Engine - Air Conditioning Compressor Drive Belt Jumps Off Pulley**	**Article No. 92-24-15**

MEDIUM/HEAVY TRUCK:
1991-92 F & B SERIES, L SERIES

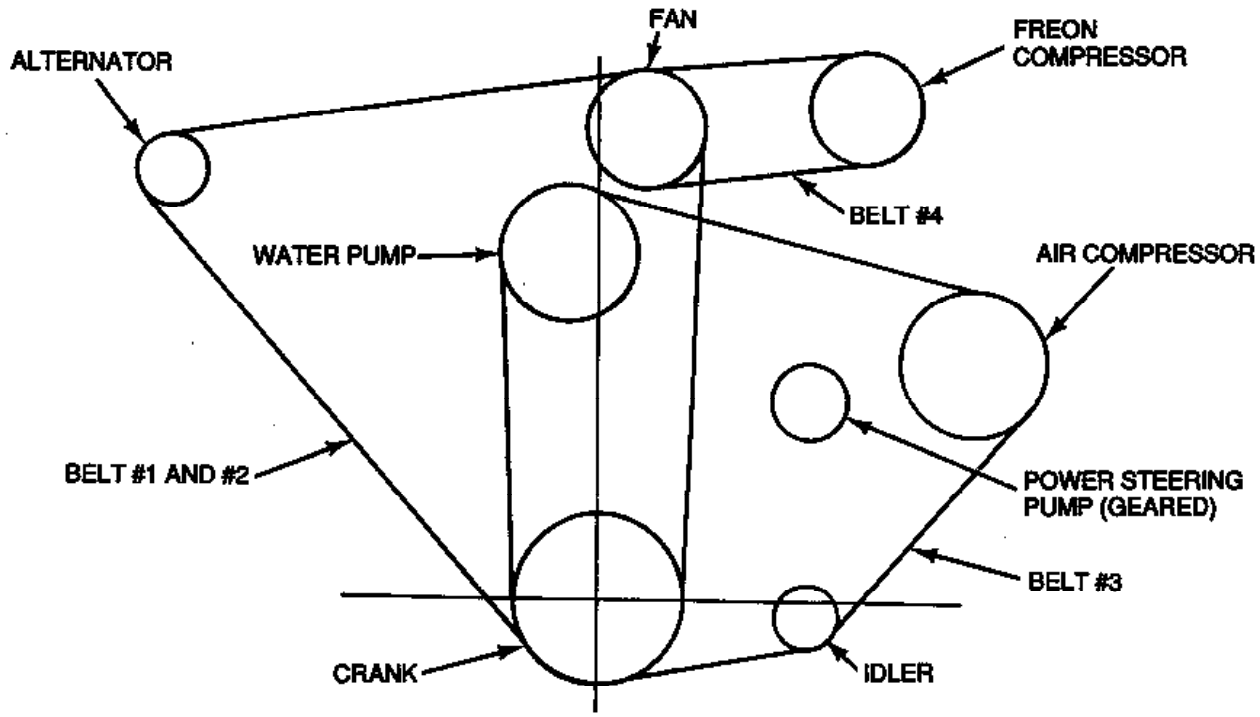
ISSUE:
The A/C compressor drive belt may jump off resulting in a lack of cooling. This occurs because of the belt's length and belt/pulley routing configuration.

ACTION:
Replace the current A/C compressor drive belt, which is driven off the crank pulley, with a shorter belt driven off the fan clutch, Figure 1. Add an extra pulley to the fan pulley and replace the fan clutch. Refer to the following service procedure for details.

FNH A/C BELT CONCERN



CURRENT 1992 PRODUCTION ARRANGEMENT



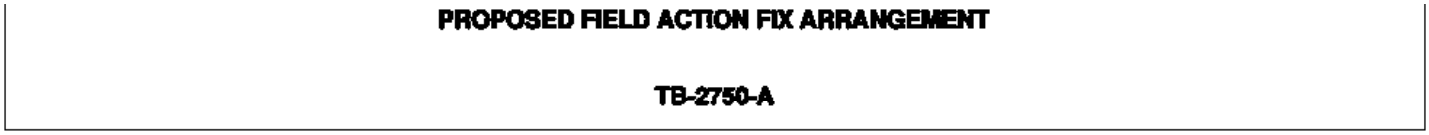


Figure 1 - Article 92-24-15

SERVICE PROCEDURE

CAUTION:
PROTECT THE RADIATOR FROM DAMAGE. WHILE REMOVING AND INSTALLING THE HARDWARE, PLACE A PIECE OF CARDBOARD BETWEEN THE FRONT OF THE FAN AND THE RADIATOR.

NOTE:
IN SOME CONFIGURATIONS, ESPECIALLY ON F-SERIES, IT MIGHT BE NECESSARY TO LOOSEN THE LOWER RADIATOR MOUNTS AND DISCONNECT THE UPPER RADIATOR BRACES TO PROVIDE CLEARANCE TO REMOVE AND REINSTALL THE HARDWARE.

1. Release tension of the A/C belt.

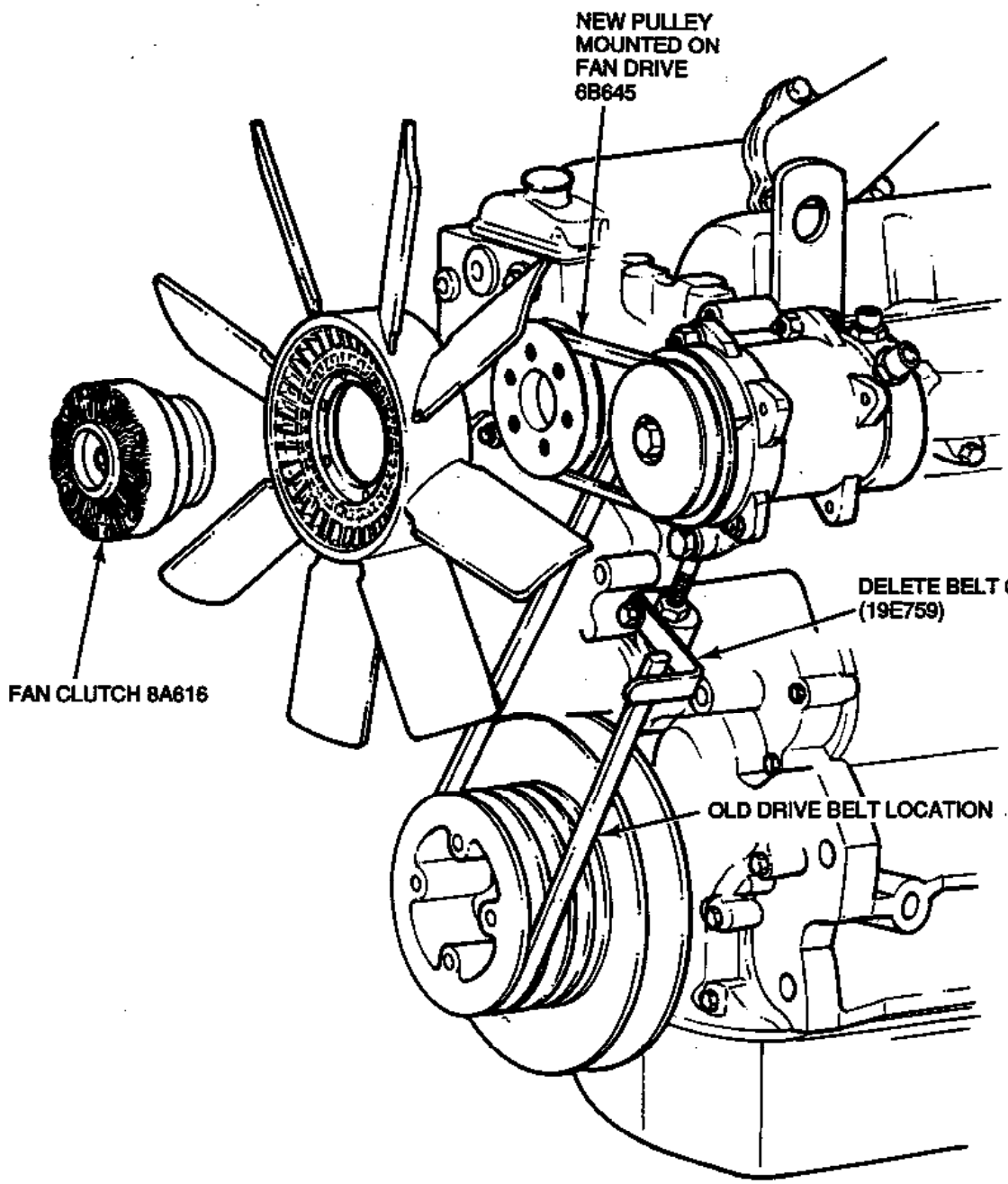
2. On F-Series, remove the upper radiator support brace to cowl bolts, allowing the radiator to tilt forward approximately .5" - .75" (12.7 - 19.1 mm)

   NOTE:
   THIS SHOULD NOT BE NECESSARY ON L-SERIES TRUCKS.

3. Remove fasteners retaining the clutch/fan assembly to the drive pulley and remove the assembly.

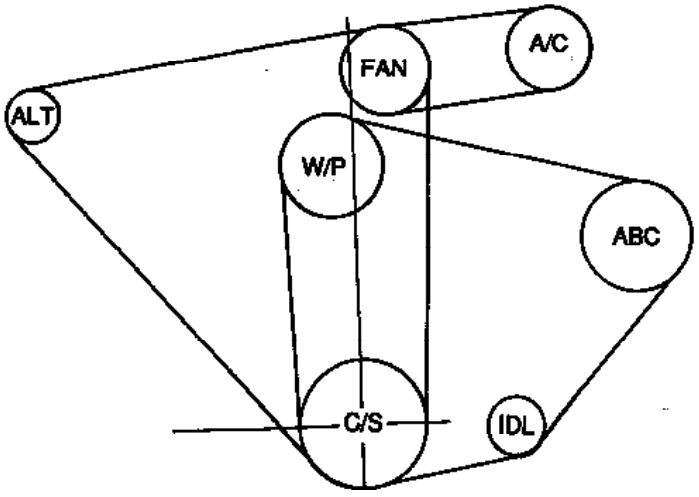
   NOTE:
   ACCESS TO THE FASTENERS MAY BE IMPROVED BY LOOSENING THE ALTERNATOR BELT TENSION TO ALLOW THE FAN HUB TO ROTATE.

4. Remove the belt guide and/or the A/C Idler Pulley, Figure 2.



MAIN VIEW
WITH SANDEN COMPRESSOR

NEW BELT SCHEME



FNH 7.8L FREON DRIVE (AUX. PULLEY AT FAN DRIVE)

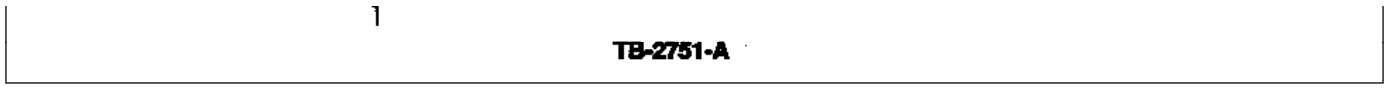


Figure 2 - Article 92-24-15

NOTE:
DIFFERENT CONFIGURATIONS OF IDLER BRACKETS AND IDLER PULLEYS EXIST IN THE FIELD.

5. Reinstall the bolt and tighten to 31-42 lb-ft (42-60 N-m).

6. Remove the fan clutch and A/C drive belt.

7. Attach the new Auxiliary Drive Pulley (F2HZ-8678-B) to the existing fan pulley using the fan clutch attaching bolts just removed. Tighten to 12-17 lb-ft (16-23 N-m).

8. Install the new A/C drive belt (F2HZ-8620-H).

9. Attach the fan to the new clutch. Tighten the bolts to 12-17 lb-ft (16-23 N-m).

10. Install the fan and clutch assemblies to the pulley. Tighten to 66-83 lb-ft (89-113 N-m).

NOTE:
THE PULLEY HAS A LEFT HAND THREAD. THE CLUTCH MUST BE ROTATED COUNTERCLOCKWISE TO TIGHTEN.

11. Retighten the new A/C drive belt to 120 lbs. (534 N). Retighten the alternator belts to 100 lbs. (445 N).

NOTE:
IF CARDBOARD WAS USED TO PROTECT THE RADIATOR, REMOVE IT AT THIS TIME.

12. Reinstall the upper radiator support brace bolts as required. Tighten to 25 lb-ft (34 N-m). If the lower radiator mounting bolts were loosened, tighten them to 50-75 lb-ft (68-102 N-m).

CAUTION:
THERE HAVE BEEN REPORTS OF THE REAR-MOST ALTERNATOR BELT SCUFFING ON A CLAMP ON THE OUTBOARD OIL COOLER HOSE. INSPECT FOR THIS CONDITION AND ROTATE THE CLAMP AS NECESSARY TO REDUCE THE POSSIBILITY OF SCUFFING THE BELT.

CAUTION:
THERE HAVE BEEN REPORTS OF AN INTERFERENCE CONDITION BETWEEN THE A/C COMPRESSOR MANIFOLD TUBES AND THE POWER STEERING RESERVOIR AFTER THE NEW FAN CLUTCH AND PULLEY ARE INSTALLED. IF THIS CONDITION IS FOUND, IT CAN BE EASILY CORRECTED BY CAREFULLY BENDING THE RESERVOIR BRACKET UNTIL THERE IS A 1/2" TO 3/4" (12.7MM TO 19.05MM) CLEARANCE.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: Eligible Under Basic Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 208200, 499000

92-25, ***Publication Date: DECEMBER 2, 1992***

• Misfire Or Stumble - 6.6L Ford Diesel Engine - Static Timing Advance With New 770mm High Pressure Fuel Injection Lines - Certified To 1991 Emission Standards • Exhaust - White Smoke - 6.6L Ford Diesel Engine - Static Timing Advance With New 770mm High Pressure Fuel Injection Lines - Certified To 1991 Emission Standards	Article No. 92-25-17

MEDIUM/HEAVY TRUCK:
1991-93 CARGO SERIES, F & B SERIES, L SERIES

This TSB article is being republished in its entirety to clarify where to insert the pointer in Step 6 of the procedure.

CALIBRATION:
1-80J-R00, 1-80B-R00, 1-80A-R00

WARNING:
THIS MODIFICATION IS AUTHORIZED ONLY FOR THE LISTED ENGINE. PERFORMING THIS MODIFICATION ON OTHER ENGINE CALIBRATIONS IS UNAUTHORIZED AND COULD CREATE LIABILITY UNDER APPLICABLE FEDERAL OR LOCAL LAWS.

ISSUE:
The engine may misfire or stumble and there may be excessive white exhaust smoke during all ambient temperatures. This is caused by the static timing not being properly advanced.

ACTION:
If service is required, advance the fuel injection pump timing 2.5° on 1991 6.6L Ford Diesel Engines by using the following service procedure.

SERVICE PROCEDURE

NOTE:
INSTALLATION OF F1HZ-9N868-C HIGH PRESSURE FUEL INJECTION LINES IS REQUIRED TO ALLOW THE TIMING ADVANCE.

1. Remove the injection pump access cover and gasket.

2. Rotate the engine clockwise.

   a. Set engine at correct static timing angle with number 1 piston on the compression stroke.

   b. Fit Damper Aligning Pin T87T-6379-A through the timing bracket into the correct crankshaft damper groove, Figure 1.

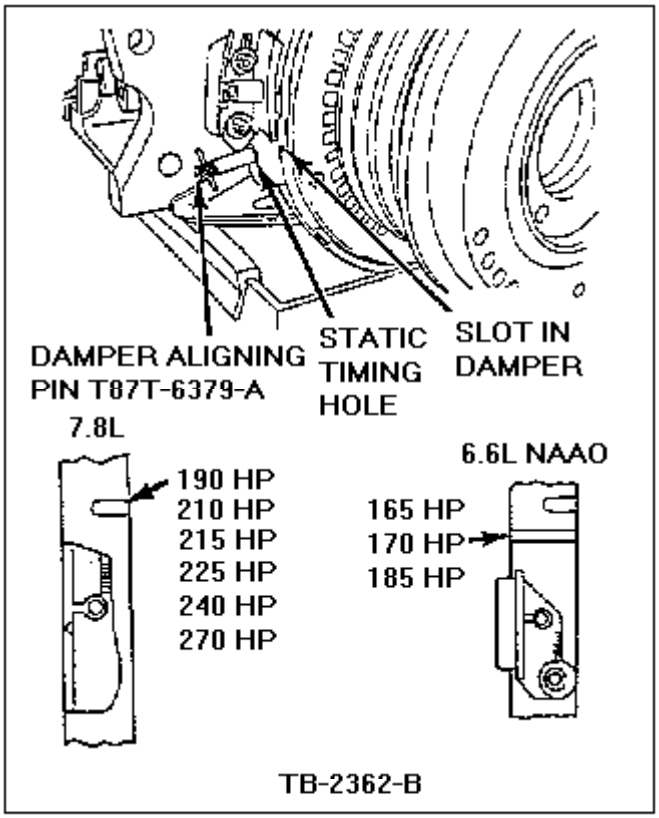


Figure 1 - Article 92-25-17

NOTE:
WHEN UNABLE TO ACCESS THE FRONT DAMPER MOUNTING BOLT TO ROTATE THE ENGINE, REMOVE THE PLUG OR TACH SENSOR AT TOP OF FLYWHEEL HOUSING TO ROTATE FLYWHEEL RING GEAR WITH LARGE SCREWDRIVER, FIGURE 2.

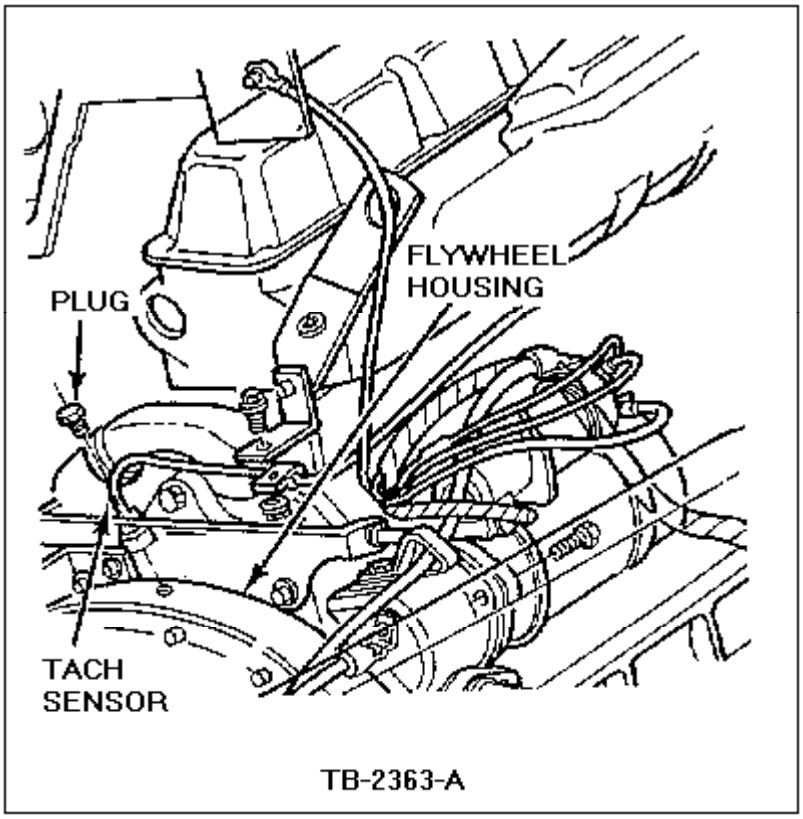


Figure 2 - Article 92-25-17

3. Insert the Injection Pump Aligning Pin T91T-9000-A through the gear plate, gear, hub and into the inner timing plate hole, Figure 3.

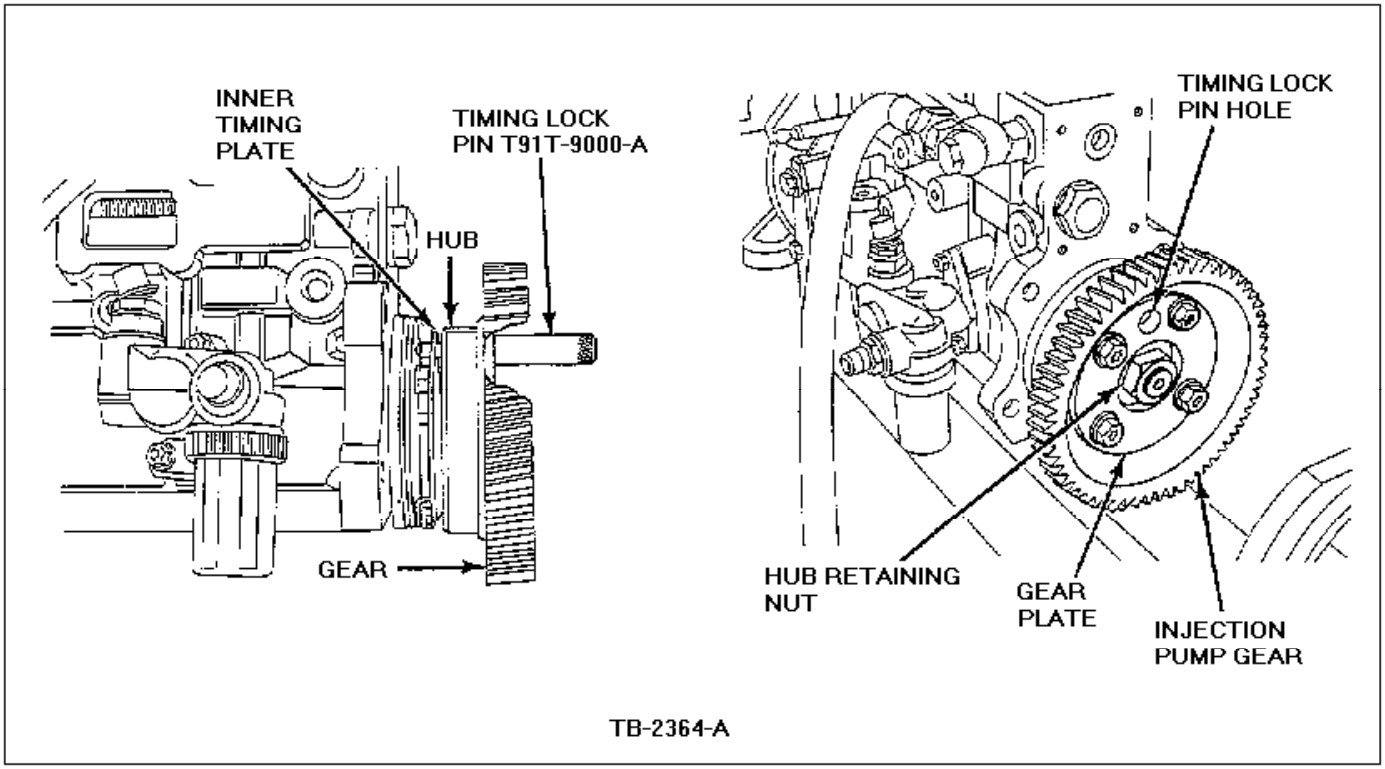


Figure 3 - Article 92-25-17

CAUTION:
THE TIMING PIN SHOULDER SHOULD SEAT AGAINST THE GEAR PLATE FACE WHEN THE PIN IS PROPERLY AND FULLY SEATED IN THE TIMING PLATE HOLE. THIS VERIFIES PROPER ENGINE TIMING.

4. Loosen the four (4) pump gear bolts, finger loose, so the plate can rotate from the gear, Figure 3.

5. Loosen the damper timing bracket at the front cover.

6. Insert a pointer into the hole in the front cover (.125"/3.175mm), next to degree marks on damper, Figure 4.

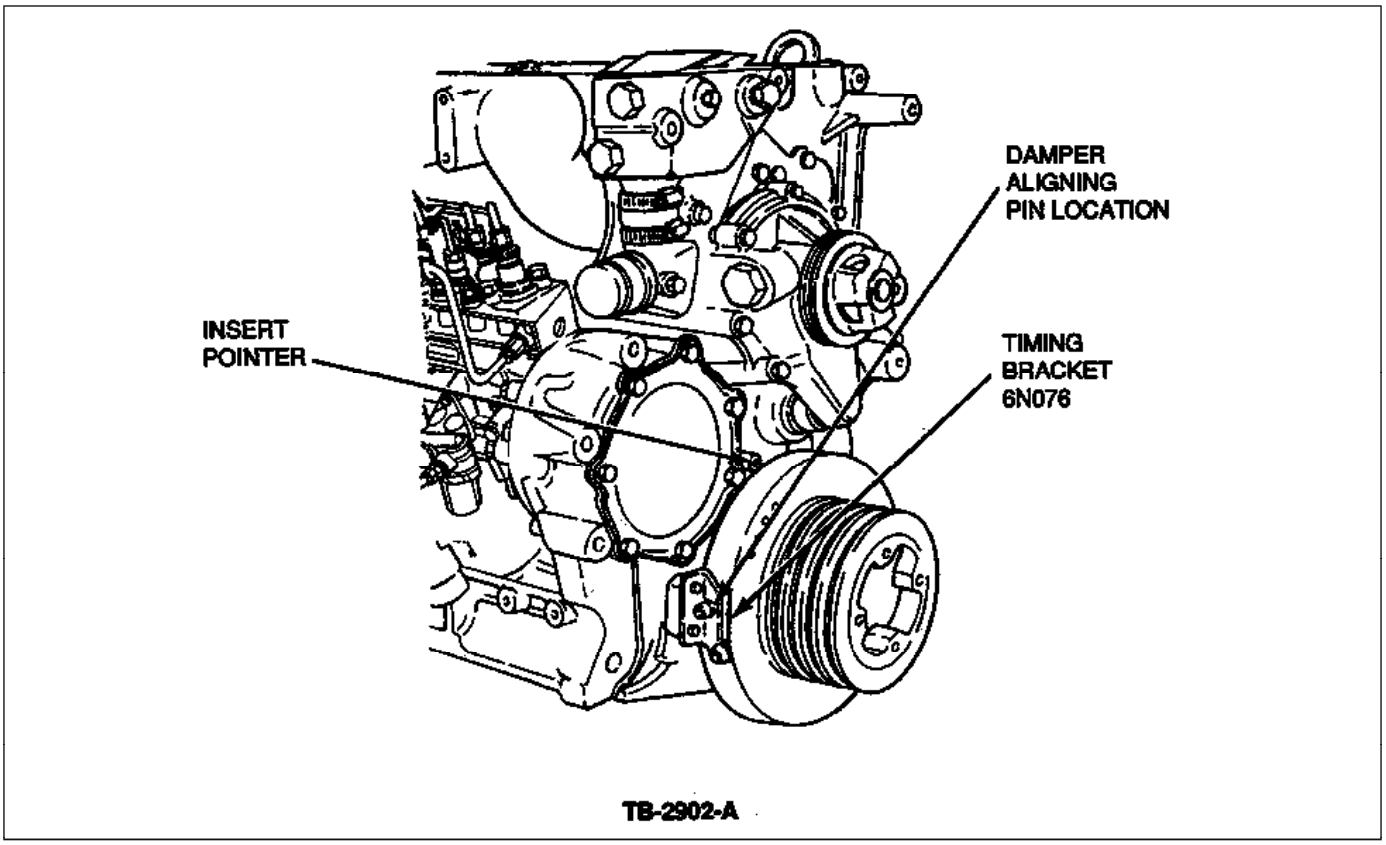


Figure 4 - Article 92-25-17

7. Rotate the engine counterclockwise until it lightly contacts the pump timing pin.

8. With the injection pump timing pin still in place, Figure 3, carefully rotate the engine clockwise until the pointer installed in Step #6 indicates new timing mark from the following MFM07.8FPK8 Engine Family Timing Chart.

NOTE:
(*) INSTALLATION OF F1HZ-9N868-C HIGH PRESSURE FUEL INJECTION LINES IS REQUIRED TO ALLOW THE TIMING ADVANCE. REFER TO THE APPROPRIATE SERVICE MANUAL FOR HIGH PRESSURE FUEL LINE REMOVAL AND INSTALLATION PROCEDURES.

NOTE:
THERE IS SUFFICIENT CLEARANCE BETWEEN THE GEAR HOLES AND THE BOLTS TO ALLOW MOVEMENT WITHOUT BINDING ON THE BOLTS. STEP #8 HAS ADVANCED THE STATIC TIMING TO THE NEW STATIC TIME AS SHOWN IN THIS CHART.

9. Turn the gear counterclockwise by hand to remove any backlash.

   a. Tighten the four (4) bolts to 5 lb-ft (7N-m).

   b. Remove the pump timing pin.

   c. Tighten the four (4) bolts to 38-52 lb-ft (52-70N-m).

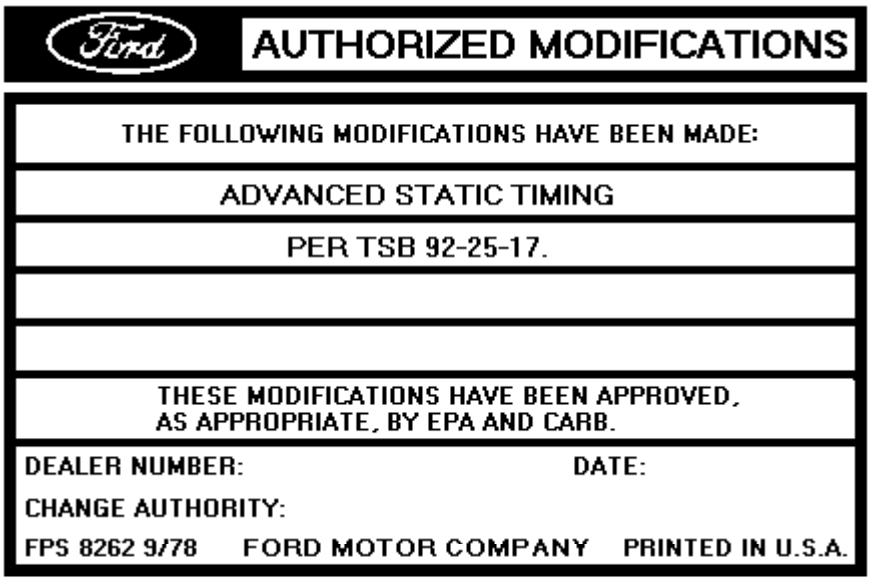
   NOTE:
   PREVENT THE GEAR FROM ROTATING WHILE TIGHTENING THE GEAR BOLTS TO THE FINAL TORQUE VALUE.

10. With the timing lock pin in the damper slot, tighten the timing bracket bolts to 7 lb-ft (9N-m).

11. Remove the damper aligning pin.

12. Scribe a reference mark on the front cover.

Obtain an Authorized Modifications Decal and list the date, dealer number, and summary of alterations performed. Select a prominent place adjacent to the Vehicle Emission Control Information Decal suitable for installing the Authorized Modifications Decal. Clean the area, install the decal, and cover it with a clear plastic decal shield.


Ford
AUTHORIZED MODIFICATIONS
THE FOLLOWING MODIFICATIONS HAVE BEEN MADE:
ADVANCED STATIC TIMING
PER TSB 92-25-17.
THESE MODIFICATIONS HAVE BEEN APPROVED, AS APPROPRIATE, BY EPA AND CARB.
DEALER NUMBER:
DATE:
CHANGE AUTHORITY:
FPS 8262 9/78 FORD MOTOR COMPANY PRINTED IN U.S.A.

OTHER APPLICABLE ARTICLES: NONE

SUPERSEDES: 92-11-17

WARRANTY STATUS: Eligible Under Basic Warranty Coverage, 1991 California, 1992 And Later Federal Emissions Warranty Coverage, Powertrain Warranty Coverage

LABOR ALLOWANCE

DEALER CODING

OASIS CODES: 403000, 609000, 609400, 609500, 611000, 611500

Bulletin Contents

TSB Article 92-25-19 has been superseded by Article 95-23-16.

92-26, ***Publication Date: DECEMBER 16, 1992***

• **Accelerator - Availability Of Accelerator Return Spring Service Kit** • **Accelerator - Return Springs Weaken Or Break**	**Article No. 92-26-10**

MEDIUM/HEAVY TRUCK:
1986-87 CARGO SERIES

ISSUE:
An accelerator return spring service kit for 1986-87 Cargo Series Trucks is now available for service. It offers improved durability of throttle return springs.

ACTION:
Install an accelerator return spring service kit when required. Refer to the following procedure for service details.

SERVICE PROCEDURE

Each accelerator return spring service kit (E6HZ-9B843-A) contains the following components:

- Six (6) accelerator return springs
- Four (4) return spring spools
- Four (4) 4mm nuts with polyamid inserts

1. With the vehicle parked and the engine OFF, remove the accelerator return springs from the governor bracket and the anchor bracket, Figure 1. Discard these springs.

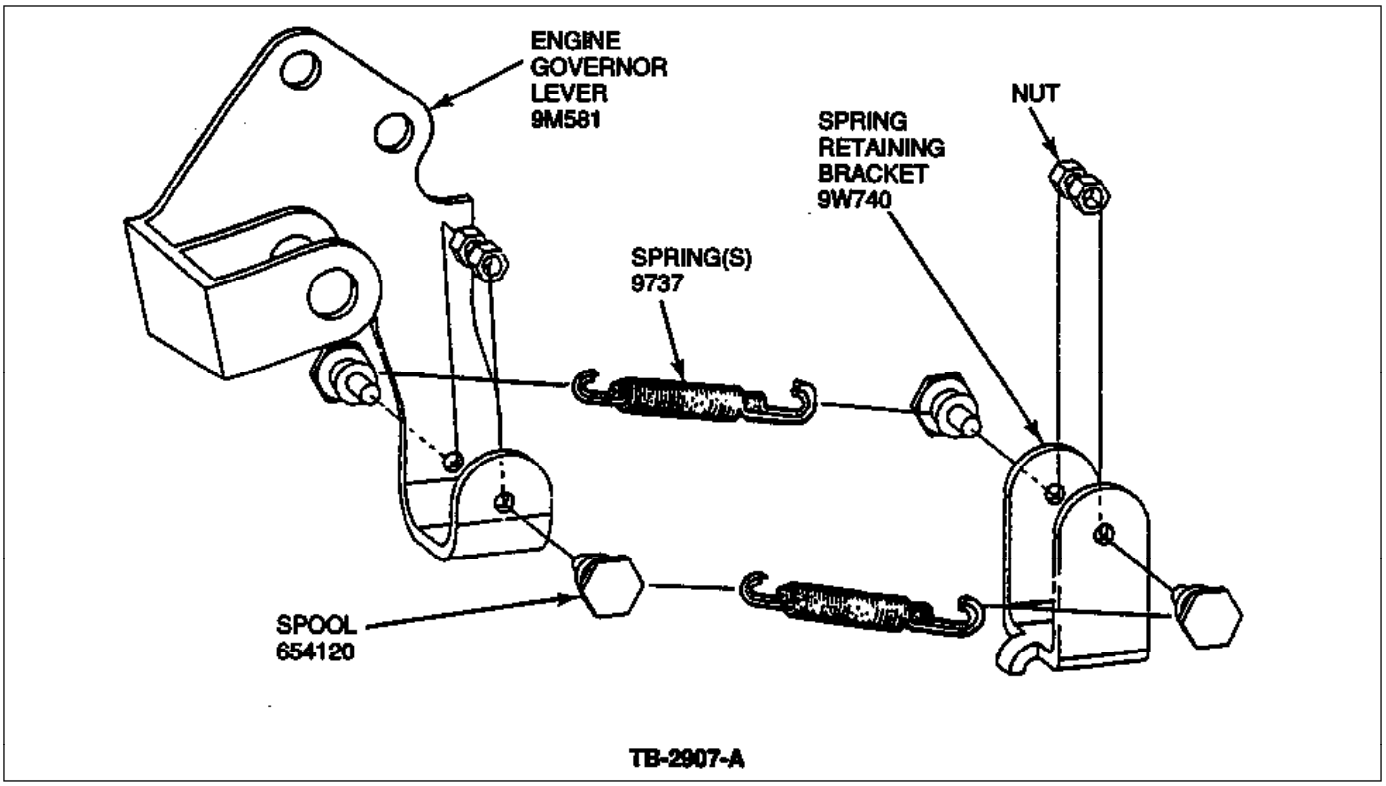


Figure 1 - Article 92-26-10

2. Install a spring spool into each of the four (4) holes used by the return springs.

   a. Install the spools as shown in Figure 1, using the four (4) nuts with polyamid inserts.

   b. Tighten to 24-32 lb-in (3-4 N-m).

3. Install the appropriate return springs provided in the kit per the instructions below.

   NOTE:
   THE SPRING HOOKS MUST WRAP UPWARDS AS SHOWN IN FIGURE 1.

   a. 1986 MODEL TRUCKS: Use only the two (2) grey springs, one (1) per side.

   b. 1987 MODEL TRUCKS: Use only the two (2) black springs and the two (2) orange springs. The black springs are to be install inside of the orange springs before installation as shown in Figure 1. Use one (1) spring set per side.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 404000, 499000

92-26, ***Publication Date: DECEMBER 16, 1992***

• **Axle - Front 10, 12 And 13K - Wheel Seal Leakage Of Synthetic Axle Lube** • **Leaks - Synthetic Axle Lube - "Chicago Rawhide Scotseal Plus" Front Wheel Axle Seals - 10, 12 And 13K Axles**	**Article No. 92-26-11**

MEDIUM/HEAVY TRUCK:
1987-90 C SERIES
1987-91 CL-CLT-9000 SERIES
1987-93 CARGO SERIES, F & B SERIES, L SERIES

ISSUE:
Switching from mineral based front axle lube to a synthetic lube in trucks equipped with "Chicago Rawhide Scotseal Plus" front axle seals may shorten the seal life.

ACTION:
Replace the front wheel seal when changing from a mineral based axle lube to a synthetic lube or vice versa.

A wheel seal used on a mineral lube axle will absorb oil and swell during the break-in period. The seal is designed to withstand this initial swelling. If the factory installed mineral lube is replaced by synthetic lube, the seal breaks in for the synthetic lube and swells for a second time. This additional swelling is beyond the design limit of the seal and distorts the seal geometry. The distortion will lower the life of the seal and may cause a premature leak.

OTHER APPLICABLE ARTICLES: NONE

WARRANTY STATUS: INFORMATION ONLY

OASIS CODES: 306000, 509000, 510000